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An unusual dam—see page 876.

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"SPREAD SUPER" FOR CEREAL CROPS

Broadcast superphosphate is not used efficiently by cereal crops. Much higher rates of application must be used to give the same results as super drilled in with the crop.

By T. E. McDOWELL and J. A. C. SMITH, Advisers, Wheat and Sheep Division, Narrogin; W. J. TOMS and M. D. CARROLL, Research Officers, Plant Research Division, Perth.

THE use of bulk superphosphate broadcast direct on to the paddocks is a new method of reducing fertiliser costs. But it has long been known that broadcasting phosphate is less efficient than drilling it in with the seed. The experiment reported here was designed to demonstrate this point.

The practice of drilling superphosphate with seed was started by Sir J. B. Lawes in England as early as 1843.

Mixing other artificial fertilisers with superphosphate soon followed, but when heavy rates of these mixtures were used, germination and early growth of crops were reduced. By taking out those fertilisers injurious to germinating seeds and broadcasting them separately, better crops were grown. Machines to broadcast these fertilisers evenly were evolved.

Later, no advantage was seen in retaining the practice of drilling the superphosphate. This was then broadcast with the other fertilisers for crop growing, a practice which continued until the Second World War.

The value of superphosphate for wheat production in Australia and North America was recognised at the turn of this century. The need arose for a means of applying it conveniently and easily over extensive areas, and this led to the production of drills which planted the seed and applied the super in one operation.

This machine was not originally designed to give efficient use of the fertiliser by the crop, but luckily the placement of phosphate with the seed proved very satisfactory in this respect.

The efficiency of this machine was recognised in England during World War II. It was used fairly extensively when large areas of phosphorus deficient grassland were ploughed up for cereal production. There has, in the country, been a swing away from broadcasting to drilling as the best means of applying phosphate to crops.

In Western Australia, where super has nearly always been drilled for cereal growing, there are increasing signs of a reversal to broadcasting. Valuable time is saved at seeding time if the super is broadcast beforehand. With more super now being handled in bulk, it is often more convenient to topdress it onto paddocks to be cropped as soon as it arrives on the farm (usually before the opening rains), than to store it for use later. This gives advantages of bulk handling on the farm and saves valuable storage space.

The advantage of drilling super with the seed rather than broadcasting it has been widely and conclusively proved. However, as the practice of broadcasting is growing, it was decided to demonstrate the relative efficiencies of different methods of applying the fertiliser.

THE EXPERIMENT

The experiment was located on the property of Mr. W. Shepherd, Narrogin. It was sown on a clover paddock cleared in 1947, which had received a total of 800 lb. of super per acre since clearing.

Three methods of applying the superphosphate were tested—

- Broadcast before ploughing (April 12, 1960.)
- Broadcast after ploughing and scarifying back (May 23, 1960).
- Drilled with the seed (June 8, 1960.)

All plots were seeded on June 8.

The rates of super used were:—

1. Nil.
2. 20 lb. per acre.
3. 40 lb. per acre.
4. 80 lb. per acre.

All plots were sprayed with manganese sulphate solution on August 22 to correct a manganese deficiency.

Results:

Drilling with the seed was significantly better than either of the other methods of application. Broadcasting the super before the paddock was ploughed gave the same yields as broadcasting after the paddock was ploughed and worked back.

TABLE 1.—Yield of Wheat (Bushels/acre) from Different Rates and Methods of Application of Superphoshate—

Rates of Super lb/acre.	METHOD OF APPLICATION	
	Broadcast Prior to Seeding.	Drilled with Seed.
20	16.2	18.9
40	16.6	19.3
80	17.7	21.8
	Average: 16.8	Average: 20.0

When no super was used the yield was 15.9 bushels/acre.

Note:—As there were no differences in yield between the two broadcast treatments, only the average broadcast yield is shown.

A drop in yield of about three bushels an acre resulted from broadcasting the super rather than drilling it.

It must not be forgotten that this experiment was on land that had received considerable amounts of phosphate in the past. A yield of nearly 16 bushels an acre was obtained without using super.

On newly cleared land, and using higher rates, greater differences between the methods of application would have been obtained. On old land that has received a greater total quantity of super, the differences between the methods of application would be much less than those in this experiment.

Because broadcasting is less efficient than drilling, it is logical to reason that by broadcasting higher rates of super than normal, the same yields should be obtained as from the drilling of normal rates. In practice this has proved to be so.

Experiments in England and the United States of America have indicated that about twice as much phosphate is needed when it is broadcast compared with when it is drilled.

In our experiment, 80 lb. per acre broadcast was almost as good as 20 lb. per acre drilled. If super has to be broadcast for cropping it should therefore be quite profitable to at least double the proposed rate of application. Not only would yields be increased, but part of the additional super would be available to pastures and crops in future years.

The experiment also showed that on land with a history of over 800 lb. of super applied, increasing rates of superphosphate up to 80 lb. per acre gave profitable increases in yield. It is very likely that yields would have been further increased by higher rates.

Taking the price of super landed on the farm at £14 10s. a ton and wheat at 12s. a bushel, 100 lb. of super needs to give only one bushel increase in yield to pay for itself.

IN BRIEF

- When broadcast, super is not as efficiently used by a cereal crop as when it is drilled with the seed.
- If superphosphate is broadcast much higher rates should be used for cereal crops.

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STONEVILLE RESEARCH STATION

THE experimental programme at the Department of Agriculture's Horticultural Research Station at Stoneville was on show when the station's first full-scale field day was held this spring.

About 100 fruitgrowers saw the progress made in development of the station and its research programme, and discussed the experiments with the experts concerned.

The station covers 85 acres, half of which will eventually be planted to orchard. So far nine acres of experimental orchard have been planted, five of citrus and four of apples. There are also two acres of old orchard (established before the station was bought) which is being used for short term trials.

Work on development of the station started soon after purchase, in 1955, beginning with a detailed survey of soils and topography. These provided basic information for planning the layout of the station.

In the plan, provision was first made for internal roads to cut the area into suitable experimental blocks. An overall plan for drainage and irrigation was then formulated, water catchment constructed, and the first experimental orchard blocks established.

Extensive drainage was necessary. All areas prepared so far have been drained, and drainage is continuing as the planted area expands. When completed, all experimental areas will be drained by underground tile drains.

Two dams have been completed, and store about 4,000,000 gallons. The reticulation system which has been planned will allow any part of the planted area to be watered. It is expected that the storage will need to be increased as the station develops.

A nursery was established in the first year of development and this has provided all the experimental trees required so far. Virus free stock and scion material is also being tested and built up in the nursery.

New varieties of peaches, apples and strawberries have been imported, and are also under test in the nursery.

Stoneville Research Station will answer a long felt need for central horticultural

HORTICULTURE FIELD DAY

Left: Field day visitors in the main block of the apple rootstock trial. A lupin cover crop is growing between the rows of young trees.

Outlining the purpose and progress of the experiment is senior fruit adviser F. Melville.

Right: The field day opened by the Minister for Agriculture, Mr. C. D. Nalder. About 100 growers inspected research in progress on the station.

research station on which long term, detailed experiments can be carried out on all classes of tree fruits. It will also enable research workers to carry out experiments which could not be done on growers' properties.

A hills district was chosen for the station because a wide variety of tree fruits can be grown there, and because it is within easy reach of Perth. Proximity to Perth allows better access to specialists from other branches, and closer supervision of all research work.

Here are some facets of the research programme as seen by visitors at the field day:

This 3,000,000 gallon dam was completed this year, bringing the station's storage capacity to 4,000,000 gallons. Four-inch concrete pipes and three-inch portable aluminium sprinkler lines have been installed for irrigation

Station Manager W. Lockwood explains the use of hardwood sawdust as a soil mulch and hilling material for apple layer beds. This has been highly successful at Stoneville. The sawdust gives good weed control, good root development on off shoots, and reduces labour costs

A close-up of the root growth in sawdust is shown below

ROOTSTOCK TRIALS

The main long range experimental programme now in progress at the station concerns testing of citrus and apple rootstocks. These experiments, which will take some years to complete, were planted as soon as facilities became available.

There are two main experiments, with provision for more to come, dealing with rootstocks and soil management.

Apple Rootstock Trial:

Granny Smiths and Jonathans worked on 14 different rootstocks have been planted in a trial comparing the recently introduced English Merton and Malling stocks with the standard Northern Spy, Pomme de Neige, and seedling rootstocks now in general use.

The English rootstocks were imported through Victoria, and have been selected for woolly aphis resistance and a range in vigour.

An interesting finding is that some of them show considerable resistance to nematodes under local conditions. Nematodes are not a problem in colder climates, and this resistance had not formerly been realised.

After the first year of this trial, differences in vigour are showing up. The Malling-Merton 109 and 103 have produced the largest trees.

Orange Rootstock Trial:

Washington Navel and Valencia oranges have been worked on five rootstocks, to compare a number of new stocks with the standard Citronelle. The new stocks under test are:

Sweet Orange, which tends to give fruit of a better quality than Citronelle.

Troyer Citrange and *Trifoliata,* both of which are resistant to phytophthora root rot and nematodes. They are also expected to give a slightly better quality fruit.

Cleopatra Mandarin, which is extensively used in California, but now appears to have no special attributes under local conditions.

The budwood for all trees is specially selected for freedom from scaly butt virus, which attacks the Troyer Citrange and Trifoliata stocks.

It is too early to see any practical results in this trial, but in the first two years Citronelle and Sweet Orange have produced the biggest trees.

Fertiliser treatments will later be compared in one section of this trial, but applications will not be made until the trees are well established.

Another section of the work on oranges is a small-scale test of a number of strains of Washington Navel and Valencia, to find out whether any of these are better suited to our conditions than those now used. Those under test include local selections and imports from the Eastern States.

HERBICIDES IN THE ORCHARD

Weeds around the butts of fruit trees are a universal orchard problem. They compete for moisture and harbour pests and diseases, and in some cases can be a fire hazard.

Most growers who attempt to control these weeds resort to hand hoeing to clean around the butts, which is tedious and time consuming and lasts only until new weeds germinate.

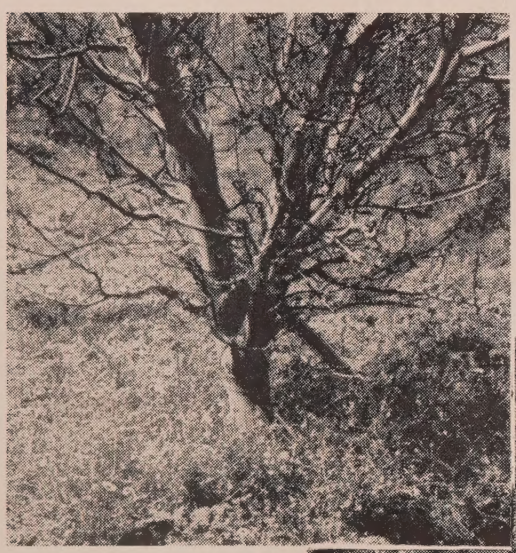
Trials at Stoneville aim to find a chemical treatment which will be cheaper, easy to apply, longer lasting, and will do away with hand chipping on apples and pears. It is hoped that with one or two well-timed sprays a year, it will be possible to achieve year-round control of these weeds.

A number of selected sprays are under test. Factors being investigated are time of application, strength, combinations of sprays and stages of weed growth.

The systemic herbicides dalapon and amitrol (at up to 10 lb. per acre) are most successful for control of perennials, and also give a good initial knock down of annuals, at much lower rates of application.

The soil sterilant group, particularly simazine, shows great promise for lasting control of annuals, being able to kill a wide range of weeds soon after emergence.

Combinations of systemic and sterilant sprays have given the best results at Stoneville. Such combinations can give



Above: Uncontrolled weed growth around the butt of an apple tree

Right: Adviser K. Whitely points out the result of a single spray with a mixture of sterilant and systemic type herbicides. Such combinations have given the best results at Stoneville; they can be more effective than the two herbicides applied separately

better results than the added effects of two herbicides applied separately.

DELAYED FOLIATION

In years of mild winters apple trees are subject to delayed bud burst and foliation because lack of cold weather upsets the normal reactions of the trees. Less buds grow and the leaves are late in appearing, and the result can be a lower yield.

Trials have shown that certain dormant sprays, containing oil and dinitrocresol will bring buds out more normally in the spring. Under certain conditions this will increase yields.

Experiments with new spray materials are continuing, with the aim of finding the most effective material to add to a normal oil spray. It appears that application will only pay in unusually mild winters.

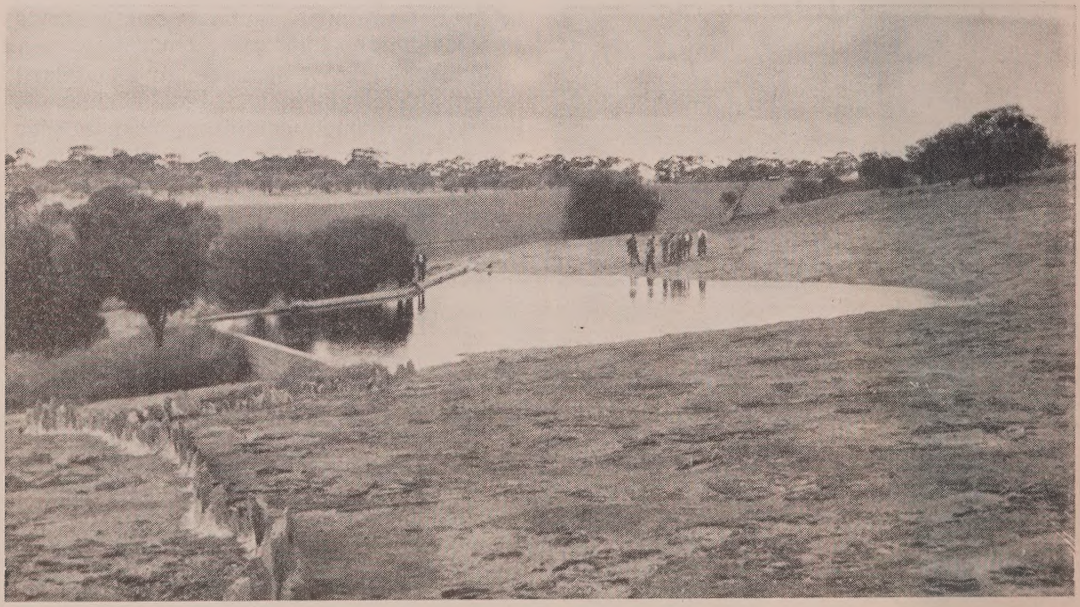
PREHARVEST DROP SPRAYS FOR APPLES

Work with Jonathans has shown that 2.4.5 trichlorphenoxy propionic acid gives better control of drop than napthalene acetic acid although it has the disadvantage of accelerating ripening under certain conditions.

APPLE MOSAIC

Apple mosaic is a common virus disease infecting apple trees in this State. Foliage growth and yields may be considerably affected and even in trees showing little outward sign the efficiency of the tree could be impaired. Scion and stock material free from mosaic is being sought by means of indexing selected material on the sensitive variety Lord Lambourne. Special heat treatment of apple shoots to free them from mosaic is also being investigated.

Cover Picture



This big rock outcrop on Mr. K. Allen's Glen Lee Merino stud property at Bruce Rock provides an ideal catchment and dam site. The 2,000,000 gallon dam fills easily, with the help of a rough stone drain cemented to the rock.

Few farms have natural catchments as good as this, but well planned and constructed earth dams can be just as useful. The Department of Agriculture can give advice on dam construction and the use of furrows or roaded catchments to help fill dams with a limited rainfall.

THIRSTY COWS ARE POOR MILKERS

Cows need shade and plenty of cool drinking water to maintain their milk production in hot weather.

By S. R. DUNSTAN, M.D.A., Technician

THE HOT summer weather is not far away, and now is a good time for the whole milk producer to attend to those points which will ensure that milk production is maintained at a high level during this period.

Feed supply is the first aspect, and is rarely overlooked, but the provision of adequate watering facilities and shade are points which are frequently ignored. Lack of these often limits milk production during the summer.

Even in an otherwise well managed herd a farmer will often comment upon the sudden loss of production during a particularly hot spell. Herd recording figures too will give further evidence of a general drop in production over summer unless facilities are provided to lessen the effects of heat.

Water Supplies

Cows' milk contains about 87 per cent. water, so limitations in the supply of fresh water can seriously restrict the quantity of milk which the cow is capable of producing.

During hot weather the cow needs about two or three gallons of water a day for each gallon of milk produced, and a further eight gallons for body processes.

Except in the irrigation areas, summer pastures are much drier than those available in winter, and very little water accumulates on the herbage through rain and dew. Because cows need less water in winter, and can obtain part of their requirements through the pasture, the provision of many watering points is not as pressing in winter as it is in summer.

The result is that the extra summer need is sometimes forgotten and the hot weather arrives before the farmer thinks of attending to watering facilities.

Cows will not walk any great distance to drink, even though they may be thirsty. Unless they are close to a watering point supply they prefer to wait until milking time. The daily requirement of a cow during hot weather is about 20 to 25 gallons, and this is too much for a cow to drink at milking time.

On dairy farms where few watering points have been provided a positive indication of inadequate facilities is that the cows crowd around the watering point and fight to get a drink. Where the holding yards are one of the few places where cows can drink, disturbances are bound to occur there.

This is most undesirable just before milking, and also introduces a risk of injury to shy members of the herd. These occurrences are all too common.

A severe drop in milk production is bound to follow.

The best solution is to provide adequate watering facilities, as well as shade. If possible a scheme should cover all pad-

A cement drinking trough located to allow cows in the raceway or the adjoining paddock to use it. The circular design helps to prevent crowding when many cows are thirsty. Water stays cooler in cement troughs, and placing the supply in the shade is also an advantage.

docks, as well as raceways and holding yards. For the convenience of the cows a trough is best located near the middle of the paddock. Alternatively a trough can be placed across a fence line so that it serves the two paddocks.

Shade Trees

Cement troughs, especially if shaded, will maintain water at a lower temperature than metal troughs. This is an important point because few cows will drink hot water.

Shelter trees in all paddocks are an essential feature of well planned dairy farms in the whole milk areas. If trees are not already present they should be planted, with protective fences surrounding them.

The weeping willow has proved to be very suitable in the irrigation areas, but any tree is an asset if it makes effective shade.

PLAN FOR MASTITIS CONTROL

By S. L. DILKES, Adviser, Dairying Division

MASTITIS is a term which means, broadly, inflammation of the udder and its tissues. It is the chief disease among dairy cows the world over, and is responsible for enormous losses both in time and production.

It is safe to say that in our own dairying areas there is not one herd which has not got or had some form of mastitis in either an acute or chronic stage. The productive life of many a potential top-line cow is either curtailed when she is prematurely culled, or reduced as one quarter goes dry.

Research has continued for years and is still going on in an endeavour to either overcome or limit the ravages of this disease, and currently antibiotics are

being used in increasing quantities and often unwisely by farmers as the last line of defence. The stage has been reached, however, when the indiscriminate use of these drugs is becoming a serious menace to public health, especially in milk for human consumption. The time may not be far off when legislation will call for strict measures for control of their use.

What, then, can the farmer do to combat mastitis? The answer, though perhaps a hackneyed one, is that prevention is better than cure, and more emphasis must be laid on control measures and early detection of its onset.

It is well known, of course, that mastitis is contagious and can be spread from cow to cow during the milking process once infection has begun. Let us look at some of the most common causes of this infection.

Udder Damage

Anything which causes actual damage or injury to the udder tissues is a predisposing factor. Under this heading comes the treading of teats, bruising of the udder by accident or rough treatment, and the milking machine and its operation. The bacteria causing the disease are always present and once any of these produce favourable conditions, mastitis can occur.

It appears after long observation that the milking machine is the most important of these factors. It has the greatest influence on the incidence of mastitis, especially if not used correctly.

Milking with too high a vacuum, or an unsteady vacuum have been blamed for outbreaks, but this has yet to be proved. The same can be said of pulsation, speed, and ratio of squeeze to release.

On the other hand, inflation of liner design has been shown to have an effect, for the disease appears to be more common in cows milked with wide line, low tension, hard mouthed liners than with the narrow bore, high tension soft mouthed type.

Again, while there is no conclusive proof, it does appear that more problems of mastitis in machine milked herds are associated with slow milking than rapid milking. This situation tends to improve with faster milking. The method of stripping may be at fault here, especially in a plant where there are too many units per operator. It is wrong to spend time overstripping each cow to get the very last ounce of milk from her, especially with too much massage or rough handling of the udder.

Most dairy farmers have had an opportunity recently to again see the fine film made by the famous Dr. Petersen, in which it was demonstrated very dramatically first how the teat cup left on too long can climb the teat and cause inflammation of the inner tissues thus opening the gate to infection.

Hygiene

The spread of these ever present organisms is done chiefly at milking time by operators' hands, udder cloths and the teat cups. Precautions here could well cut down the spread from cow to cow, and even from one quarter to another.

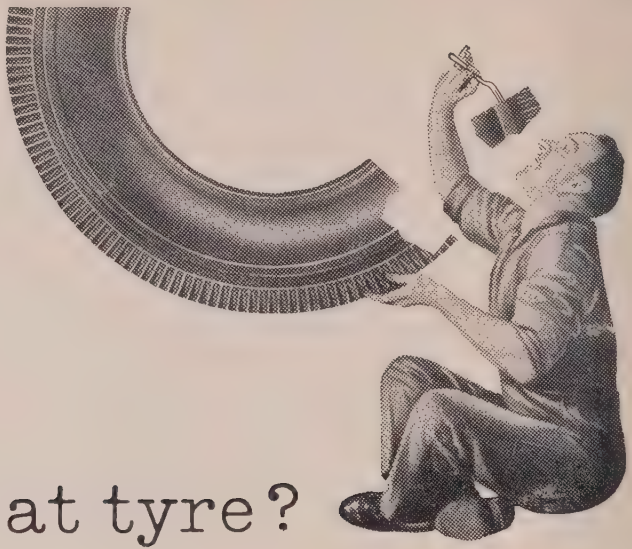
The ideal, of course would be to use a sterile cluster for each cow, but as this is out of question other methods must be examined. Plunging the cluster into disinfectant at each change does not kill the bacteria but does actually wash many of them off. Much better, though not always so practicable, is to flush with running water for a few seconds.

Udder wash water should be made more effective by adding a suitable bactericidal agent and, if possible, using several cloths at a time, never the same one on two successive cows. In this way those soaking will become partly sterilised.

Strip Cup

In the prevention plan early detection is the key—the strip cup pinpoints the source of the disease and the infected cow can be segregated to be milked last and treated with the appropriate antibiotics.

Above all, a plan must be adopted and adhered to if mastitis is to be controlled. It may take slightly longer to milk by following it but when you consider the money and the time that can be lost by lower production, and inferior milk and cream as well as the cost of drugs—the results of following the plan will amply compensate for the extra time involved.



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Too Early To Graze Bluebush

Bluebush seedlings from seed caught under brush and sticks are still very small and furry in spring

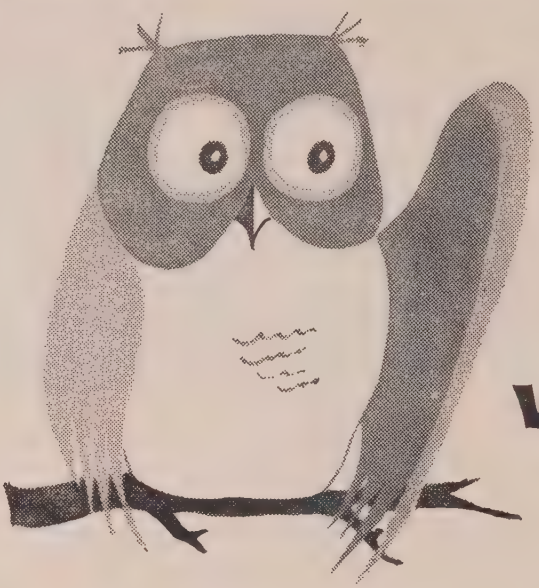
MANY people, including research officers in this Department, have examined bluebush and saltbush plantings in spring, and, finding nothing, have assumed failure.

In some cases farmers have acted on similar assumptions and put the sheep in. In cases where stock were kept out, examination in the following autumn has often disclosed young bluebush and saltbush plants.

Bluebushes and saltbushes make very little growth until summer and may easily be overlooked, especially if only a thin stand has been obtained. Even where plants are apparent in spring it is unwise to graze before autumn as any plants which have established may be given a severe setback. A further reason for not grazing is that bluebush and creeping saltbush plants will produce seed in their first autumn if protected. This seed will germinate with the opening rains and help to thicken the stand.

Farmers who have a bluebush stand which they wish to thicken up would also be wise to defer grazing until autumn in order to let seedlings become well established. As the pictures show, seedlings, although they germinate in autumn or winter, are still very small in spring. Such seedlings may easily be killed by stocking.

Bluebush seedlings from seed caught against a stick. Note these are still very small in spring and may be killed by grazing



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● **Another "new" Pig Disease**

VIBRIONIC DYSENTERY OF PIGS

This brief description of a disease recently diagnosed for the first time in Western Australia is given so that breeders have some chance of recognising it in their herds. Suspected cases should be reported without delay.

By M. R. GARDINER, B.S., V.M.D., Chief Veterinary Pathologist

VIBRIONIC DYSENTERY of pigs, also known as porcine vibriosis and swine dysentery, has been recognised for many years in the U.S.A. It was first reported in Australia in 1938, in South Australia, and later in both Victoria and New South Wales.

Outbreaks of vibrionic dysentery have been described subsequently in the Eastern States of Australia but only very recently was the disease confirmed in Western Australia. This occurred in a piggery at Norseman.

The recognition of vibrionic dysentery in Western Australia has prompted this brief clinical description as there are, no doubt, many cases that escape notice due to lack of familiarity with the disease.

Vibrionic dysentery is primarily a disease of young pigs. The peak incidence in endemic districts appears to occur at about three months of age, within a few weeks of weaning. Severe cases have been seen in two to three-week old piglets, while animals as old as five months may occasionally be affected.

If the infection strikes a previously clean herd, all growing animals up to five months of age may be affected to some extent but as the disease becomes established weaner pigs are those mainly involved.

There has always been some question about the cause of vibrionic dysentery. In 1944 workers in Indiana, U.S.A., found an organism in the bowels of pigs affected with this disease resembling very closely the infective agent of human cholera, and which eventually was given the name *Vibrio coli*. It is not easy to transmit vibrionic dysentery with cultures of this organism and this fact has been responsible for the doubt expressed about its role in the disease.

However, there is fairly general agreement today that *Vibrio coli* is intimately associated with the condition, although it is likely that factors such as changes in feed (and others at present unknown) precipitate clinical disease in pigs harbouring the organism. Apparently, an adult carrier state develops in the herd, and when conditions are right the organisms invade and cause disease in the weanling pigs.

SYMPTOMS

Diarrhoea is the main feature of vibrionic dysentery. Its intensity can vary between violent blood-tinged scouring to mere softening of the faeces.

The diarrhoea is accompanied by marked dejection and lassitude, dehydration and thirst. The back is arched, the eyes sunken and the tail limp and wet.

Loss of condition is very rapid in this disease and death may follow within three to four days. Some outbreaks are attended by high losses—up to 75 or 80 per cent.—but the average mortality rate in weaners is about 25 per cent. of the pigs in an affected litter.

The lesions of the disease are invariably confined to the large intestine, where the lining becomes reddened and inflamed, and

the contents fluid and foetid. The stomach may sometimes be mildly inflamed but the small intestines are seldom affected in any way, the inflammation of the large bowel ending abruptly at the point of entry of the small intestine.

A great deal of mucus is secreted by the intestinal wall in this disease and, occasionally, damage to the wall is severe enough to produce ulceration and bleeding. Therefore, the diarrhoeic discharges always contain much mucus and may sometimes be blood streaked.

The disease is characteristically intermittent, that is, shows periods of remission followed by a renewal of the diarrhoea. Pigs that survive are usually stunted and unprofitable.

TREATMENT AND CONTROL

There is probably only one certain way of controlling vibrionic dysentery and that is by getting rid of all stock, cleaning and disinfecting the premises and beginning again with new breeding sows from a known clean source.

If treatment is preferred, a number of drugs have given limited success. The best of these appears to be an arsenical called Stovarsol but both streptomycin and aureomycin have been used effectively.

There is some evidence that a deficiency of vitamin A may be a predisposing factor in the development of this disease, and may increase its severity. Therefore, adequate vitamin A supplements should be provided.

DIAGNOSIS

Like most diseases of pigs, this one can be difficult to diagnose.

There are other diarrhoeic diseases which can exist in piggeries. Some of these, such as salmonellosis, are a menace to public health as well as to the pigs. Therefore, it cannot be too strongly emphasised that if a suspicion of vibrionic dysentery exists, competent veterinary advice should be sought.

It is generally possible to make a proper diagnosis of vibrionic dysentery if an affected pig (or a pig dead not more than six to eight hours) is promptly submitted to a veterinary surgeon. A smear of the intestinal wall will reveal thousands of the typical vibrios.

Herds in which vibrionic dysentery is endemic are uneconomic herds, and should be investigated by a veterinary surgeon.

Although vibrionic dysentery is caused by an organism very similar to the cholera vibrio of man the pig organism will not cause any human disease. However, vibrionic dysentery is interesting from the medical point of view as its development in the gut and the way in which it causes dysentery are probably much the same as in human cholera.

Another point of confusion exists in the name given to the dreaded swine fever by North American workers. Swine fever is known there as hog cholera, although it is neither cholera in the human sense nor vibrionic dysentery, but a virus disease.

Swine fever (the American hog cholera) does not exist in Western Australia and it is essential that all pig growers in this State should be aware of the probability of swine fever gaining a foothold here.

Any pig diseases that are not clearly identifiable should be immediately reported to the nearest veterinary officer or veterinary surgeon; it would be a catastrophe if swine fever gained entry to this State.

DISEASES OF PIGS

VIBRIONIC DYSENTRY is one of a number of pig diseases diagnosed recently through the Department of Agriculture's veterinary diagnostic service and which had not previously been reported in Western Australia.

These include swine erysipelas, talfan disease, infectious (inclusion body) rhinitis, swine pox and Glasser's disease. Most are thought to have been present at a low level, but undetected for some time. They will be discussed in more detail in future issues of the Journal of Agriculture.

Recommended

WHEAT VARIETIES

1962

Planting guide and variety recommendations for the 1962 season.

Gabo.—An early maturing variety which is successful in most districts

AS a guide to farmers planting recommended wheat varieties, the Wheat and Sheep Division of the Department of Agriculture has produced a new map of the West Australian wheatbelt, showing where these varieties should be planted.

For the purposes of classification the wheat growing areas are divided into three zones:—

- Early zone—Average annual rainfall less than 14 in.
- Midseason zone—Average annual rainfall from 14 in. to 18 in.
- Late zone—Average annual rainfall above 18 in.

These boundaries are approximate in that they do not closely follow the rainfall isohyets. Length of growing season is more important than total rainfall, and in the southern parts of the State the zone boundaries sometimes extend into lower rainfall areas than the limits given above.

The map reproduced here was redrawn from an earlier map, to incorporate the latest recommendations. The main modification is the adjustment of the western boundary of the late zone to include some higher rainfall areas which were not previously considered suitable for wheat growing. These areas include the western parts of the Carnamah, Dandaragan and Victoria Plains Shire districts, and the areas west of the Great Southern railway where clover ley farming is enabling wheat growing to be extended.

Minor adjustments have been made to the boundary between the midseason and early zones.

Six Varieties

Planting recommendations are now confined to the following varieties:—

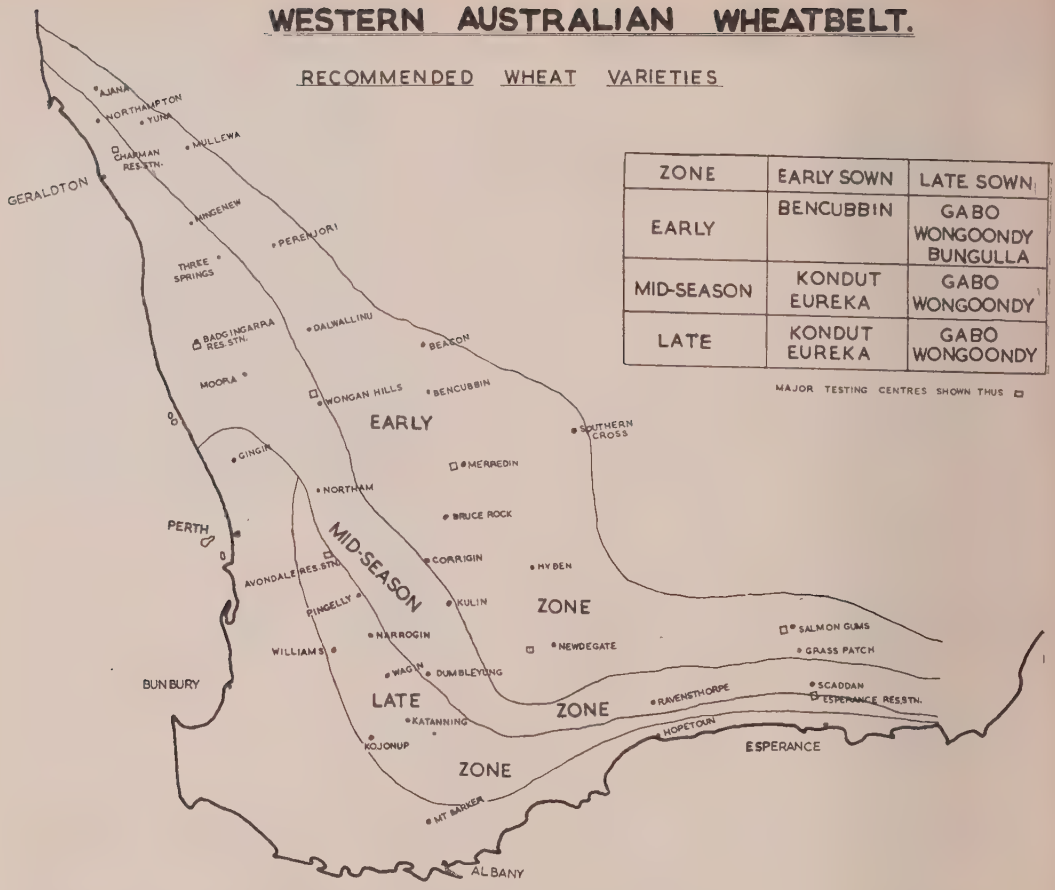
Bencubbin—Mid-season maturing. Medium tall to tall straw which shows a tendency to weakness under high rainfall, high fertility conditions. Susceptible to rust. Suited to early sowing in the drier districts.

Bungulla—Very early maturing. Medium tall to tall straw with a tendency to weakness under high rainfall, high fertility conditions. Susceptible to rust. Suited to later sowing in the drier districts.

Eureka—Mid-season maturing. Medium tall, strong straw. Very suitable to the northern areas, because of its rust resistance.

Gabo—Early maturing. Short to medium height strong straw. Susceptible to flat smut and rust. Especially successful in most districts.

Kondut—Late mid-season maturing. Medium tall strong straw. Susceptible to rust. Suited mainly to medium and high rainfall conditions.



Wongoondy—Early maturing. Medium tall, strong straw. Because of its rust resistance very suitable to the northern wheatbelt.

These should be planted after reference to the map. Consideration should also be given to soil conditions and general suitability to the district.

Bencubbin and Bungulla are lower quality wheats, but planted in the early zone where the season finishes more quickly they tend to produce higher protein grain. The others are better quality varieties.

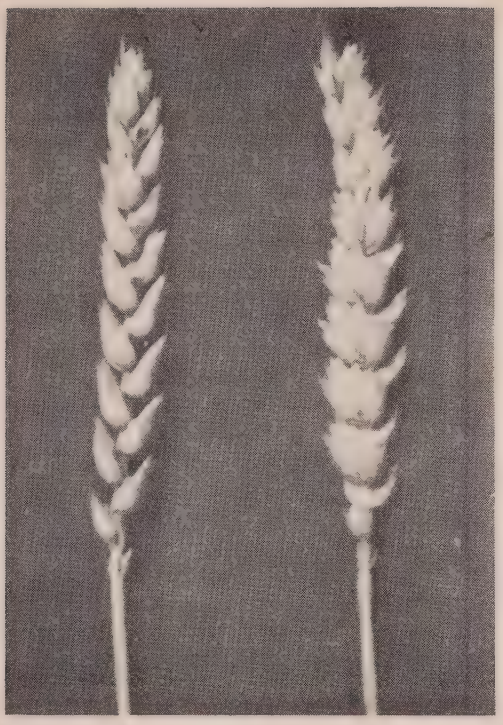
Quality and Uniformity

The recommendation that planting should, where possible, be confined to these six varieties was made by the State Wheat Advisory Committee. This committee is made up of representatives of The Farmers' Union of W.A., Co-operative Bulk Handling Ltd., the Australian Wheat Board, the W.A. Flour Millers' Association and the Department of Agriculture.

Limitation of the number of varieties is part of a long term plan whose aim is to produce uniform, high quality grain from Western Australia. At present, more than 80 wheat varieties with a wide range of grain and flour qualities are grown in this State. Greater uniformity must result from an intelligent reduction of the number of varieties sown.

Selection of the varieties was based on a large number of field trials on the Department of Agriculture's research stations throughout the wheat growing areas. These take into account—

- Yield, the major field characteristic.



Kondut.—Late midseason variety suited mainly to medium and high rainfall conditions

- Quality, as assessed in the Cereal Research Laboratory. Grain is tested in the laboratory for protein content and quality (flour strength) as well as by baking tests.
- Agronomic characteristics, such as maturity, height, straw strength and disease resistance.

As part of the programme to improve the uniformity and quality of the State's wheat, the Committee also made the following suggestions to farmers:—

(a) Farmers should not grow either Bluclub or Gluclub for general delivery to the bulk handling system, but only for specific orders such as for biscuit makers. Both are very weak soft varieties. Bencubbin 48, a soft wheat with hard grain of poor milling quality is not now recommended.

(b) Strong hard varieties such as Festival, Koda, Saga and Spica should only be grown on heavy land in short season districts where the intention is for sale as premium grain to individual millers.

(c) Neither Insignia nor Insignia 49 are recommended and it is suggested that these be gradually discarded. Insignia 49 was sponsored by the Department because of its rust resistance but as this has broken down due to the occurrence of a new strain there is now no point in growing it on this score. Further, more recent information, including the experience of flour millers, suggests that it is not a good grain quality variety under West Australian conditions. The Committee has therefore suggested that it should be replaced with one of the early varieties mentioned, appropriate to the particular district.

The Committee's recommendations were not intended to restrict farmers' experiments with new varieties which might be

Bencubbin.—Midseason variety for early sowing in the drier districts

available from other States but it suggested that the main sowings should be confined to the varieties listed. It is strongly urged that farmers should not import seed of the extremely poor quality soft variety Glenwari.

The Department of Agriculture obtains small quantities of all new productions from other States for experimental sowing and assessment of suitability for this State, and can give information on any variety which a farmer might wish to import.

APPLICATIONS FOR PEDIGREE SEED

SUPPLIES of pedigree seed of wheat, oats and barley from the forthcoming harvest will be available for distribution at the Department's Research Stations. Varieties available this season will be:—

WHEAT

Midseason—Bencubbin, Eureka (rust-resistant); Kondut.
Early—Gabo; Wongoondy (rust resistant).
Very Early—Bungulla.

OATS

Midseason—Avon; Dale.
Early—Ballidu; Kent.

BARLEY

Beecher (Pickled or Unpickled); Prior (Unpickled).

WIMMERA RYEGRASS

"Merredin" Early Strain.

Prices a bag of three bushels, including rail freight to farmer's siding, will be: Wheat, 60s.; Oats, 40s.; Barley, 55s.; Barley (Pickled), 58s.; Wimmera Ryegrass, 40s. per bushel.

Prompt attention to orders will be ensured if the following directions are observed by intending applicants:—

- Make early application direct to the **Department of Agriculture, Jarrah Road, South Perth.**
- Give clearly full name, postal address and siding to which the seed is to be railed.
- As soon as possible after receipt of account, remittance should be forwarded. Statements are sent out in order of receipt of application. No definite reservations can be made until the seed is paid for.

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SOME RECENT RURAL RADIO TALKS

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FACTORS IN WEED PROPAGATION

By G. R. W. MEADLY, M.Sc., Officer In Charge, Weeds & Seeds Branch

IN crop and pasture plants, seed production and harvesting are of vital importance. In a negative way, the formation of seeds by weeds can be equally important.

Many weeds do not rely entirely on seeds for spreading, however, and all methods of propagation must be taken into account when endeavouring to control or eradicate them.

Weeds proliferate in three main ways:

- By spores, as in the case of algae and mosses.
- By seed—undoubtedly the commonest way, and
- By various vegetative structures, including stolons, rhizones, corms, bulbs and tubers.

Let us consider a few examples, particularly from the angle of characteristics which may influence control measures.

Spores have many of the properties of seeds and are often adapted to withstand much more severe conditions, particularly of temperature and moisture, than the plants from which they are derived. Algae can be very troublesome in dams and swimming pools and are also a problem with some industrial processes. A number of chemicals, including copper sulphate, are used for their control. Best results can be expected by treatment before spores have been formed, as spores may

Mature plant of wild turnip, in seed. In this condition the plants break off and are blown about the paddocks shedding seeds over wide areas

Two-leaved Cape Tulip. Cormils have developed freely on the untreated plants on the left, while the plant on the right sprayed with 2, 4-Dester six weeks before the picture was taken, is unthrifty, has no cormils and has the characteristic swelling immediately above the corm

survive treatment and remain for later propagation.

Most weeds are spread by means of seeds, many of which are adapted to increase the chances of being carried by animals, wind, water or some other agency.

The primary objective of practically any control programme is to prevent the weed from forming viable seeds. This may be done in a variety of ways, including cultivation, grazing, mowing and the use of chemicals. Arresting all seed development in any one year, however, does not mean that no further plants will appear. Many species, particularly weeds, produce a proportion of dormant seeds which remain alive in the soil for many years.

Several of our common weeds provide excellent examples of this. The double-gee, if buried to a depth of several inches, may remain alive for at least ten years, and there is evidence that wild radish seeds will survive for a similar period. The eradication of saffron thistle, Bathurst burr and caltrop is also made more difficult by the delayed germination of a proportion of the seeds.

Some plants rely to some extent on their vegetative parts for multiplication and distribution. The spread of water hyacinth is due largely to pieces breaking from the parent plants and floating away to form new colonies. Weeds such as sorrel, although they spread from seed, are also carried by implements as root fragments cut up and disturbed by cultivation. These can soon give rise to new plants.

The two types of cape tulip indicate how efficient vegetative reproduction can be. One-leafed cape tulip sets seed but the two leaved type is not known to mature seed in Western Australia and relies entirely on corms and cormils for reproduction. How effective they can be is shown by the wide distribution of this weed and the difficulty of eradication.

The dormancy problem is not restricted to seeds, and the production of dormant corms by cape tulip makes this weed even more difficult to combat.

Fortunately, recent research carried out by the Department of Agriculture has

shown that the proportion of dormant corms can be reduced considerably by burning the dry growth on infested areas during the autumn. This brings about a more complete emergence of the plants and allows control measures, both cultural and chemical, to be undertaken with greater effect.

COTTON — A Crop for the Kimberley Settlement

By W. M. NUNN, Superintendent, North-West Division

AFTER a good deal of exploratory work and research into crop production hazards, settlement of the Ord River flats in East Kimberley is at last under way. A reservoir is under construction and the first farm—the pilot farm—is already producing rice, safflower and linseed in commercial scale irrigation bays.

Research work by Agricultural Department and C.S.I.R.O. workers has been going on since 1947. Most settlement schemes in Australia have started off with very much less preliminary work so we can answer the critics with an assurance that although we may be in a new and challenging area, Kimberley is already more "researched" than was any other area in Australia when farms were first established.

However, this would not be quite true of cotton at the moment; and because cotton is a product which will pay the farmer more handsomely than the other crops already proven, we have to do a full scale job on it now in a hurry so as to be ready for the settlers who will take up blocks in only two or three years' time.

Cotton belongs to the hibiscus family, which has many well known members in our ornamental gardens; its growth and form is not unlike the apple blossom hibiscus so popular in Perth. For commercial purposes the life of the cotton plant is cut short after the main fruiting is completed from the first season of growth. This is about five months from planting. Watering is discontinued and the sudden check to plant growth causes leaves to fall, leaving the open cotton bolls exposed for collection by the spindles of the mechanical cotton picker.

Here I should add "we hope," because this is one of the remaining uncertainties—one of the circumstances we need to check and double check before permitting farmers to base their future on it. Most commercial cotton areas have a cold snap with some frosts at this stage of the cotton's growth and the frosts ensure a thorough leaf drop. Kimberley does not have a frost or even a very cool night. If cessation of water doesn't do the trick then some chemical treatments may have to be developed.

The other uncertainty that remains with us concerns the practical methods to be used on a field scale to control insect pests.

Species of wild hibiscus abound in Kimberley and these serve as host plants for the many insects which damage the cotton plant and its maturing bolls.

These insects provide the reason why our knowledge of cotton is a few years behind our knowledge of other crops studied. The insects beat us for several seasons and success was not achieved until recent advances gave us new and better insecticides.

These have controlled the pests on experimental areas but we still have to do it on large areas, probably using aircraft; and we must develop these techniques to the stage where they can be enunciated for farmer use.

Next wet season a lot of effort will be concentrated on a study of these aspects of cotton as a commercial crop. Kimberley Research Station will grow about 20 acres and will study methods of obtaining the best picking results. Seed cotton from the area will go to Queensland for ginning and subsequent sale to spinners, and the full story will be available concerning quality and the manufacturing value of the Kimberley grown product.

Plans are in hand too for the cultivation of an even larger area on the pilot farm, and for this area to be used as a testing ground for aerial spraying techniques.

Whether cotton takes over as No. 1 crop from safflower, linseed and rice will, we hope, be determined by this summer programme. If it does then a ginnery has to be built along with all the other building now going on at Kununurra. If it does not, safflower, linseed and rice are profitable crops anyway, and they are straightforward ones on which sound advice can be given just as soon as the farmers are there to grow them.

- Research Officer W. J. Toms returned recently from the U.S.A., where he made an intensive study of cotton growing. The information he has gained will be applied to the large scale crops planned for next year.

DANGER FROM TRACTOR NOISE

As a result of widespread interest in the risk of deafness as a result of the high noise level from tractors, the Australian Tractor Testing Committee has undertaken investigations of noise around tractors, says the Committee's annual report for the year ending June, 30, 1961.

"The results of tests on several tractors showed that the sound pressure level, 105 to 110 decibels, was remarkably consistent and was much above the level of 85 to 90 decibels which is generally accepted as the upper limit in most factories and industries.

"Continuous exposure to noise above this level (85 to 90 decibels) usually leads to permanent damage to the eardrums and to permanent impairment of hearing," says the report.

"The Testing Station now includes noise level tests as part of the regular test procedure—the first station in the world to do so."

One company has submitted two spark arresters redesigned as mufflers for test as both spark arresters and mufflers.

The Committee reported that the year had been a disappointing one for formal tractor tests, but recent inquiries from tractor companies suggested that the number of applications for tests would increase in the coming year.

Other main features of the report are:—

Test Procedures.

As a standard feature of its tests, the Committee now requires the applicants to state, and include in test reports, the "expected range of power outputs" of the tractor engine on crankshaft test. This feature has been fully accepted and the formal tests have shown that the randomly chosen test tractors fell within the expected range of output for the models concerned.

The Committee emphasises the importance it places on this matter and its desire to bring about a more rational approach to the quotation of maximum power values. It is in the interest of the manufacturer and the user alike that the notion of a falsely precise and unduly inflated single value should be resisted in favour of the quotation of an expected range of output. Support for the acceptance of this as a standard feature in future tests continues.

Tractor Safety.

Special remote control driving gear for test tractors enables the tractors to be safely driven at speed over calibrated obstacles without an operator in the seat.

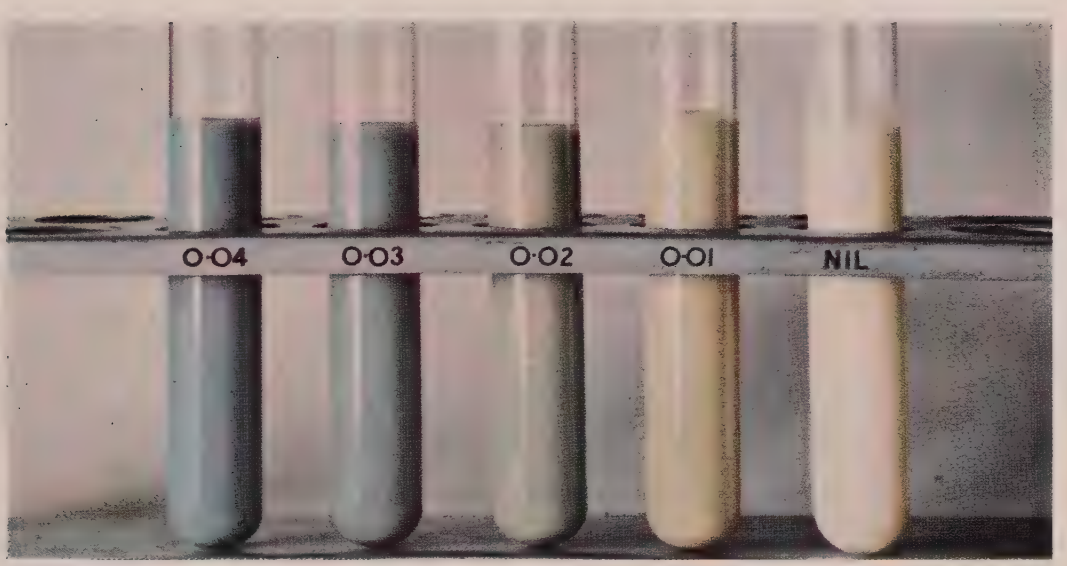
Tests have been carried out on a device in the form of out-rigger wheels fitted to the tractor in order to prevent sideways roll over. Tests so far have been inconclusive.

They do, however, reveal a serious gap in the knowledge concerning the dynamic stability of tractors. The Committee proposes to continue the field testing of this device.

Chain Saws.

The Committee agreed to co-operate with the Commonwealth Forestry and Timber Bureau in the setting up of a suitable testing scheme for portable chain saws and their engines. The Bureau will conduct the sawing tests and prepare the test reports, including a section to be prepared by the Committee on engine performance and characteristics.

Antibiotic Residues in Milk



COLOUR TEST FOR ANTIBIOTICS IN MILK

Readily detectable colour variations result from acid production by *Streptococcus thermophilus* when this organism is added to milk containing the dye brom cresol purple. Where antibiotics are present little growth occurs, acid production is limited accordingly, and the colour remains blue. The change in colour gives a measure of the amount of antibiotic present.

ANTIBIOTIC RESIDUES IN MILK

—The Farmer's Responsibility

By N. INGLETON, M.D.D. (Hons.), Dairy Laboratory

THE LEVEL of antibiotic residues in commercial milk supplies has been steadily increasing over the past few years. These residues find their way into the bulk milk as a result of milk from cows under antibiotic treatment for mastitis or other infections being included in the bulk milk for sale.

As the use of antibiotics for treatment of diseases—particularly mastitis—in dairy herds has increased, so the level of residues in commercial milk has risen. It has now become a threat to the welfare of the dairy industry.

The responsibility for inclusion of these undesirable residues falls squarely on the farmer. It is well known that no milk from antibiotic-treated cows should be included for sale until three days after the last treatment.

Those affected by antibiotic residues in dairy products are:—

- The consumer, because antibiotic residues in milk and milk products can cause allergies and sensitisation, or can affect people already sensitive to antibiotics as a result of previous medical treatment. Serious illness or death is possible in either case.
- The manufacturer, because residues affect his manufacturing processes. The results are higher costs, lower quality products, and dwindling markets.
- The farmer, because he and his family fall into the first group, and because his economic interests are threatened in the same way as those of the manufacturer.

PUBLIC HEALTH

The presence of antibiotic residues in milk and its products continues to cause concern to public health authorities throughout the world.

Consumers have begun to take an active interest, as many cases of allergy conditions and sensitisation through the consumption of contaminated milk or its products have been recorded.

It has been estimated (1) that in the United States of America, about five per cent. of all individuals are sensitive to some form of penicillin, and there is a mortality rate of 10 per cent. among the 3,000 to 4,000 cases of anaphylactoid shock (allergy reaction) reported each year.

This has created a greater recognition of the importance of penicillin and other antibiotic residues in milk utilised for human consumption.

Another factor which is causing concern is the appearance of antibiotic-resistant staphylococcal organisms in milk and dairy products. This introduces a risk of food poisoning.

MANUFACTURED PRODUCTS

Antibiotic residues in milk can easily reach the level where they kill or inhibit bacteria added to the milk for cheese manufacture. The immediate result is an extension of the manufacturing time because the bacteria take longer to develop and do their work. This in turn causes a rise in costs.

A lower quality product also results, because without the necessary production of acid by lactic acid bacteria the cheddar cheese characteristics do not develop.

Markets are no longer available for low quality products; in fact, newer markets are demanding that products be of high

quality and contain no antibiotic, weedicide or pesticide residues, oestrogenic substances, organisms of the *E. coli* group, or staphylococcal organisms.

TRENDS IN MASTITIS

Antibiotic therapy has resulted in a shift from streptococci to staphylococci as the major cause of mastitis. Other organisms capable of causing mastitis are: *S. penumoniae, E. coli, Ps. pyocyanea, P. cereus* and some fungal agents, but these are comparatively rare.

Streptococcus agalactiae still causes some mastitis, but this has been greatly reduced by antibiotic therapy. One American survey showed that the incidence of this form of mastitis dropped from 34 per cent. to 10.5 per cent. of the total of all forms during 1949-50. The incidence of pencillin-resistant *Staphylococcus aureus* in herd milk increased from 9.7 per cent. in 1954 to 37 per cent. in 1956.

A limited survey involving 1,300 cows in Western Australia indicated that 16.8 per cent. had mastitis of one form or another. Of the 1,300 cows 1.4 per cent. had streptococcal mastitis and 15.4 per cent. had staphylococcal mastitis; 20.6 per cent. of all mastitis cases failed to respond to penicillin.

The emergence of antibiotic resistant staphylococci (3) gives rise to increasing numbers of this type of organism being shed in the milk. This predisposes to food poisoning outbreaks if the milk is improperly handled.

It is believed (2) that recent American cases of food poisoning involving dried milk and cheddar cheese could have resulted from such contamination. Similar forms of *Staphylococcus aureus* were isolated from the cheese, and from the milk from two out of eight herds which supplied the factory where the toxic cheese was made.

TREATMENT OF MASTITIS

In Western Australia, antibiotics for animal treatment appear to be readily available to the farmer from most pharmacists, and sometimes from other retail outlets. The dosage rate of many products for intra-mammary infusion is 100,000 units of penicillin, but recent dosages of up to 500,000 units have been noted.

For other infections, such as foot rot, intra-muscular injection rates of 4,500,000 units of penicillin are common.

Antibiotic residues are found in the milk from cows treated either by intra-mammary infusion or intra-muscular injection, and in both cases the levels take some time to fall to zero, as shown by the graphs in Figs. 1 and 2.

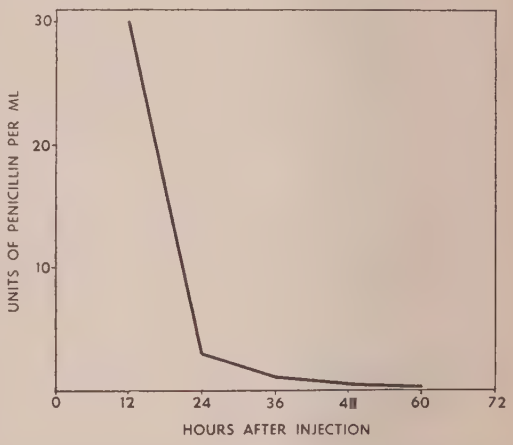


Fig. 1.—Pencillin levels in milk following intra-mammary infusion. Dose: 100,000 units aqueous solution

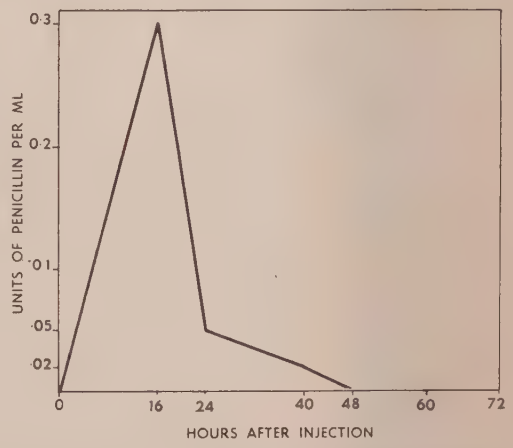


Fig. 2.—Penicillin levels in milk following intra-muscular injection. Dose: 4,500,000 units aqueous solution

When penicillin is injected (one dose of 4,500,000 units) it takes 48 hours before the level of antibiotic in the milk falls to zero. Where dosage is by intra-mammary infusion (one dose of 100,000 units) this takes between 48 and 72 hours.

All milk from a cow treated by intramammary infusion must be withheld for 72 hours. This applies also when only one quarter is treated, as the other quarters receive the antibiotic through the blood stream.

The graphs in Figs. 1 and 2 relate to penicillin in aqueous solutions. When oil base suspensions are used, the antibiotic levels in milk may be detectable for longer periods.

METHODS OF DETECTION

Detection of milk containing antibiotics by a test which would yield almost immediate results would be extremely desirable wherever milk is received. Such a test would probably be chemical rather than biological, but as yet this type of test has not been devised.

However, we do have two tests which when used either singly or together, detect low levels of antibiotics in milk, although the results are only available some time after the milk has been received and processed.

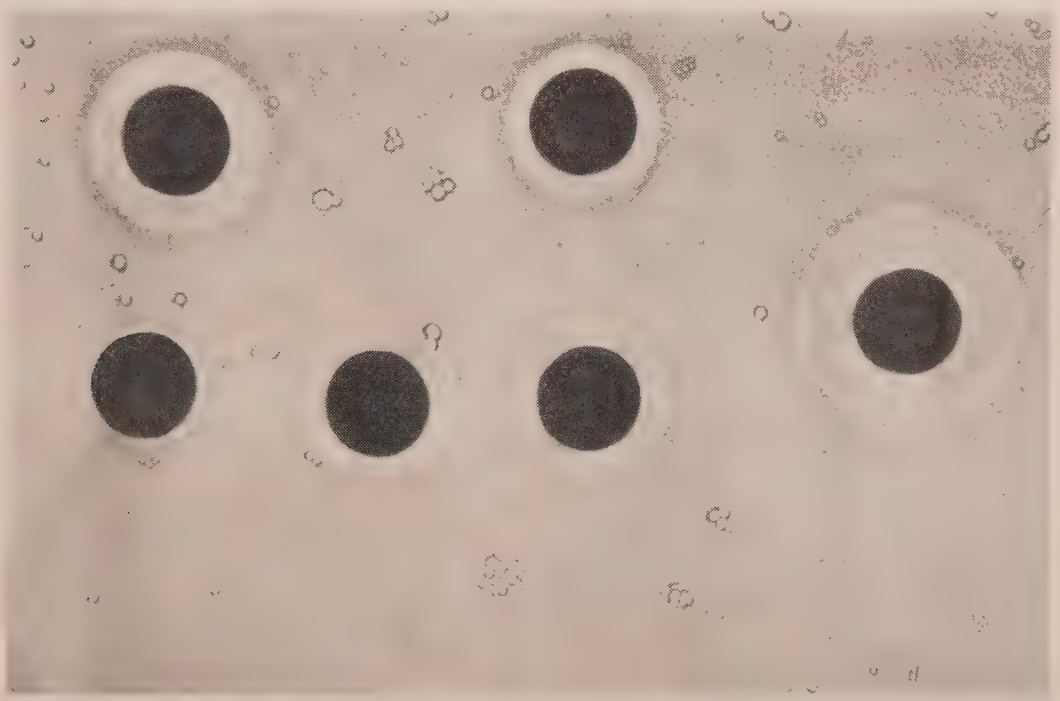
These two methods are:—

1.—Colour Test

To 10 ml. of a sample which has been heated for five minutes, is added a fast growing acid producing sensitive culture of *Streptococcus thermophilus*, and brom cresol purple dye. The test tubes are incubated for 2½ hours, together with a series of known concentrations and blanks, the colour change being matched with the known concentrations. This is a quick and satisfactory test. It was first suggested by Berridge (4) and has since been modified by Keogh (6). With this test, levels down to 0.01 units of penicillin or its equivalent are readily detectable, as shown by the colour plate.

2.—Disc Assay Test

A culture of the sensitive organism *S. lutea* is plated in dishes with agar based media. Small filter paper discs of a diameter less than 0.5 in. are saturated in the unknown milks and pressed lightly onto the surface of the media. The antibiotic, if present, diffuses from the disc



A group of assay discs used to test for antibiotics in milk. The levels vary from 2.0 to 0.005 international units per ml. Discs soaked in the milk under test are placed on a culture of *S. lutea* growing on agar. Zones of inhibition of the test organism are readily measured, and levels down to 0.005 i.u. per ml. can be detected

and a zone of inhibition is created which prevents the culture from growing. This method detects levels of 0.005 units or lower of penicillin per ml. but it requires an overnight incubation period. The method is described by Naylor (5).

Both methods are made specific for penicillin by adding the enzyme penicillinase to the second sample of the unknown. Penicillinase destroys any penicillin present in this sample, so a positive reaction from the first sample and a negative reaction from the second sample indicates the presence of penicillin in the milk under test.

These methods have been in use at the Department of Agriculture's Dairy Laboratory for some time, and have been found to be very satisfactory.

DYE PREPARATIONS

The inclusion of a dye preparation with the antibiotic for intra-mammary infusion has had a good deal of success experimentally. With further improvement, this could be a means of detecting the presence of antibiotics, as both are secreted at the same rate.

LEVELS OF ANTIBIOTICS IN WEST AUSTRALIAN MILKS

Over 700 samples taken at receiving platforms in Western Australia since June of this year have revealed that 10 per cent. are positive reactors. Of these, 40 per cent. are above the arbitrary level of 0.05 units per ml. which is considered the danger level for cheese milk.

From this, it is apparent that very little attempt is being made to withhold milk from treated cows.

IMPOSITION OF CONTROLS

The question of imposing controls for the contamination of milk with antibiotics has been considered, and the introduction of regulations is a very real possibility so long as the problem continues.

Farmer education campaigns in the United States largely failed to arrest the trend, and Federal Health legislation was introduced to cover the situation for the nation. Milk found to contain residues of antibiotic is now destroyed and the responsible person identified and penalised. In one celebrated instance, the farmer had his licence revoked and finally his herd was sold after continued breaches.

This stage has not been reached in Western Australia or Australia, and those in the industry have tended to iron out their own problems. In recent times, South Australia has limited intramammary injection to 100,000 units, under its Veterinary Medicines Act, and this has proved helpful.

The question is being continually discussed at high levels in the industry and there appears to be a commendable reluctance to take recourse in legislation. It is possible that this step may not have to be taken.

The matter rests entirely in the hands of the farmer. It is up to the farmer to prevent antibiotic loading of his product.

ACKNOWLEDGMENTS

The help of Mr. J. Craig and Mr. G. Robinson for material supplied and to Mr. K. Needham for encouragement and helpful suggestions is gratefully acknowledged.

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POWDERY MILDEW OF CUCURBITS

Powdery Mildew is one of the most damaging fungal diseases of cucurbits in Western Australia. Disease development reaches epidemic proportions in most years and results in reduction in yield and quality of crops. Regular applications of fungicides give economic control on susceptible varieties.

By R. F. DOEPEL, B.Sc. (Agric.), Plant Pathologist

POWDERY Mildew is caused by the fungus *Erysiphe cichoracearum*, which can attack a wide range of crops of the cucumber family (cucurbits). In Western Australia the disease has been recorded on cucumber, marrow, pumpkin, and rock melon (cantaloup) and is established in all parts of the State where these crops are grown.

SYMPTOMS AND EFFECTS.

The disease becomes obvious as a greyish-white powdery covering on the stems or runners, leaf stalks and leaves of affected plants. The fungus usually spreads over both lower and upper leaf surfaces to form a complete covering of fungal threads or hyphae (Fig. 1). The older leaves nearest to the crown are the first to be affected and the disease then extends outwards along the runners.

If a severe outbreak occurs the leaves wither and the plants are soon defoliated (Fig. 2).

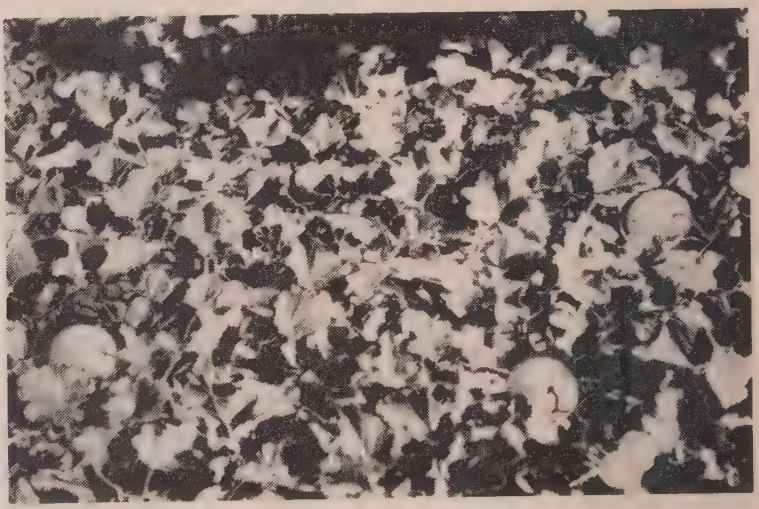
As a consequence of defoliation both fruit yield and quality are reduced, for although the fruit is not attacked directly, it often fails to reach marketable size and is affected by sunburning.

Fig. 1.—Rockmelon leaf affected with powdery mildew

DISEASE DEVELOPMENT.

Weather conditions suitable for the development of powdery mildew occur in

Fig. 2. — Above — Rockmelon plants defoliated by powdery mildew. Leaves and runners have withered and fruit is exposed to sunburning



Below. — Healthy rockmelon plants (same age as above) showing luxuriant growth as a result of protection by fungicidal sprays

most seasons. Although infection is favoured by warm to hot, humid conditions it can also occur during relatively dry weather. Following infection, minute fungal seeds (spores) are produced in enormous numbers on the diseased leaves. These spores are dispersed by wind and cause new infections in susceptible crops. During the growing season, therefore, the disease tends to increase progressively unless control measures are practised.

CONTROL MEASURES.

1. Fungicides

Powdery mildew becomes very difficult to combat when once established in the crop, and prevention rather than cure should be the aim. This can only be achieved by regular applications of fungicides. The schedule outlined below is recommended for routine adoption by growers.

(a) At the first sign of mildew spray the plant thoroughly with either of the following fungicides:—

Karathane—at 8 oz. in 100 gallons water

OR

Wettable sulphur—at 3-5 lb. in 100 gallons.

Dusting sulphur may be applied as an alternative to the spray if desired.

(Do not use sulphur on rock melons and cucumbers—see note below).

(b) Repeat the applications of Karathane or sulphur at seven to 10 day intervals for as long as the crop requires protection.

Such protection may be necessary up to the end of harvesting or until unfavourable weather conditions check further development of the disease.

Note: (i) Most plants of the cucurbit family are sulphur tolerant. Notable exceptions are rock melon and cucumber, which are severely scorched by this fungicide. Karathane and the copper-containing fungicides do not produce these adverse effects and therefore can be used with safety on these crops.

(ii) The fungicides used for powdery mildew control should not be applied on hot days, when shade temperatures exceed 90° F. This precaution should be observed to prevent scorching of the foliage.

2. Resistant Varieties

The growing of cucurbit varieties resistant to powdery mildew should be considered in districts where the disease proves a serious obstacle to crop production.

The following varieties of cucumber and rock melon have shown considerable resistance under local conditions:

Cucumber—

Supermarket and Palmetto.

Rock Melon—

Gold Coast and Hales Best.
Mildew Resistant 45.

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Honey Flora Calendar For December

COMPILED BY R. S. COLEMAN, APICULTURAL SECTION, WITH ASSISTANCE FROM THE BOTANICAL BRANCH

Common Name	Botanical Name	Where Found	Honey		Quality of Pollen	Flowering Time	Remarks
			Quality	Quantity			
Yate	*E. cornuta* Labill.	On the better soils in the Great Southern. Mostly cut out	Good	Good	Good	Dec., Jan., Feb.	Is still worked by some beekeepers on south coast. Could be budded for this year.
York Gum	*E. loxophleba* Benth	Widespread throughout the State. It is found in wide belt from north of Northampton to Salmon Gums	Good medium amber. Candies with a fine candy	Very good	Very poor	Flowers over a long time but main producing period is Oct.-Dec.	One of the main honey flows. Fails sometimes for unknown reasons. Flowering well in some districts.
Jarrah	*E. marginata* Sm.	Widespread ; on coastal plain south of Lancelin, in forest country from south of Moora to east of Albany	When pure (which happens rarely) it is a good medium amber	30-60 lb.	Excellent	Mid Oct. to mid. Dec. on coastal plain, later in the forest	The honey froths excessively. Quality is usually spoilt by poorer honeys from scrub flowering at the time. Flowering in large areas of the State.
Chenille Honey Myrtle	*Melaleuca huegelii* Endl.	Lime-stone ridges in west coastal plain	Medium	Medium	Good	Mid Dec.-late Feb.	Wideley scattered and difficult to find commercial stands ; keeps the bees going when there is nothing else.
Needle-leaved Paperbark	*M. rhaphiophylla* Schau.	Rivers and swamps in the South-West	Poor	Medium to Poor	Good	Nov.-Dec.	Not important except when associated with another medium producing flow.
Wandoo or White-Gum	*E. redunca* Schau. var. elata Benth.	Commercial stands occur between Eneabba and Mt. Barker	Choice	Excellent	Poor	Moora-Bindoon area, March-May ; Toodyay-Bakers Hill, Spring ; getting later going south till south of Wandering, Feb.-March	The major honey plant amongst the Eucalypts. Early summer flowering Wandoo could be flowering in patches.
Wild Hop	*Chorilaena hirsuta* Benth.	Karri Forest	Fair	Good-Fair	Good	Sept.-Dec.	Bees can work it in the rain as the flowers are pendant. Associated with the Soap Bush to form the Hazel Thickets of the Karri forest.
Soap Bush	*Trymalium spathulatum* (Labill.) Ostf.	Karri Forest	Fair. It has a marmalade taste	Good	Good	Sept.-Dec.	Soap Bush and Wild Hop form the Hazel thickets of the Karri Forest.

★ Feeding Trial

PICKLED WHEAT IS SAFE FOR SHEEP

. . . but it should be fed with caution, and the time of feeding it limited. Ceresan-pickled wheat should not be fed, and sheep fed on pickled wheat should not be slaughtered until some months after feeding has stopped.

By J. CRAIG, M.R.C.V.S., Senior Veterinary Surgeon, and
H. P. DWYER, Sheep and Wool Instructor

FARMERS are often left with a surplus of pickled grain from seed wheat supplies. Many would like to feed this to their stock, but do not do so because they think there may be a risk of poisoning.

This trial was designed to investigate the effects of feeding such grain to sheep.

Until recently no information was available on the newer pickling agents, Fernasan and Hexabunt. Feeding trials in New South Wales with copper carbonate (Keast 1943[1]) and in Western Australia with Ceresan (Shier et al. 1948[2]), had shown that seed treated with either could be fed to sheep for prolonged periods without producing clinical toxic symptoms.

MATERIALS AND METHODS

All four grain fungicides now in common use were compared in feeding experiments at Muresk Agricultural College last year. These agents are:—

Copper carbonate
Ceresan (organic mercury compound).
Fernasan (tetramethylthiuram disulphide-T.M.T.D.).
Hexabunt (hexachlorbenzene, C_6Cl_6).

The 30 sheep used in the experiment were cull Merino ewes, aged from five to seven years. These were randomised into 10 sub-groups, each comprising three sheep, and were held in small pens.

Each of the pickling agents was added at the standard rate of two ounces to the bushel (60 lb.) of wheat. The feeding levels of the pickled grain were ¼ lb. and ¾ lb. per head per day, selected because these were likely to be at the rates most favoured by graziers. The grain was fed twice weekly in metal or concrete feed troughs. Details of the nutritional treatments of the sub-groups were:

	Per Head Per Day.
	lb.
GROUP 1—	
(a) Copper carbonate pickled wheat	¼
Oaten chaff	1½
(b) Copper carbonate pickled wheat	¾
Oaten chaff	½
GROUP 2—	
(a) Ceresan pickled wheat	¼
Oaten chaff	1½
(b) Ceresan pickled wheat	¾
Oaten chaff	½
GROUP 3—	
(a) Fernasan pickled wheat	¼
Oaten chaff	1½
(b) Fernasan pickled wheat	¾
Oaten chaff	½
GROUP 4—	
(a) Hexabunt pickled wheat	¼
Oaten chaff	1½
(b) Hexabunt pickled wheat	¾
Oaten chaff	½
GROUP 5—	
(a) Control unpickled wheat	¼
Oaten chaff	1½
(b) Control unpickled wheat	¾
Oaten chaff	½

The animals were kept under close daily observation until the trial ended 84 days later, when all the sheep were slaughtered.

No visible carcase abnormalities were detected by post-mortem examination in any of the groups.

Animal tissues—liver, kidneys, fat and muscle—were collected from every sheep and submitted to the Government Chemical Laboratory for tissue analysis.

RESULTS

Grain Consumption:

The total amount of pickled wheat consumed by each of the five main groups throughout the trial was:—

Group.	lb.
1. Copper carbonate	207
2. Ceresan	80
3. Fernasan	223
4. Hexabunt	240
5. Control (unpickled)	240

Palatability appeared to be poorest in the Ceresan group and it proved impossible to make these sheep eat the desired levels of pickled wheat. At most only an average of a ¼ lb. per head per day was consumed, any amount beyond this being rejected.

One ewe in the Ceresan group died towards the end of the trial. It was not possible to carry out a post-mortem examination and the cause of death is uncertain. This ewe had been in poor condition and it would not therefore be reasonable to conclude that feeding Ceresan was the sole cause of death.

The consumption of wheat pickled with other agents fell between the high of Hexabunt and the very low of Ceresan. Fernasan-pickled wheat appeared to be quite palatable except towards the end of the trial when a small proportion was rejected.

Body Weights:

All groups were weighed at monthly intervals The live-weight variations are thought to reflect differences in consumption caused by palatability variations.

The mean live-weight loss for each sub-group during the feeding trial is shown below:—

Group	Sub-Group	Liveweight Loss
		lb.
1. Copper carbonate	(*a*)	16
„ „	(*b*)	14
2. Ceresan	(*a*)	20
„	(*b*)	33
3. Fernasan	(*a*)	11
„	(*b*)	8
4. Hexabunt	(*a*)	20
„	(*b*)	12
5. Control	(*a*)	8
„	(*b*)	6

Weight trends of all sheep throughout the experiment are shown in Table 1.

TABLE 1

LIVEWEIGHTS (taken at monthly intervals)

Pickling Agent	Grain per Day	Jan. 26	Feb. 23	Mar. 22	Apl. 19
	lb.	lb.	lb.	lb.	lb.
1. Copper carbonate (*a*)	¼	109	96	97	94
		98	89	83	80
		98	90	87	82
„ „ (*b*)	¾	101	104	95	100
		105	96	88	85
		104	97	88	85
2. Ceresan .... (*a*)	¼	99	80	69	Died
		96	88	80	80
		114	105	101	103
„ .... (*b*)	¾	106	90	85	80
		121	103	96	78
		115	93	90	80
3. Fernasan .... (*a*)	¼	101	86	83	85
		105	91	90	88
		107	113	109	106
„ .... (*b*)	¾	121	117	107	109
		117	107	103	107
		102	99	100	100
4. Hexabunt .... (*a*)	¼	103	74	78	73
		105	88	87	85
		100	90	85	87
„ .... (*b*)	¾	113	111	100	88
		105	90	93	93
		118	109	115	119
5. Control .... (*a*)	¼	95	94	86	87
		105	108	95	96
		95	95	83	87
„ .... (*b*)	¾	109	113	104	102
		102	102	91	95
		119	125	118	117

Tissue Analysis:

The Government Chemical Laboratory analysed organs from all groups for toxic substances likely to have been supplied by the pickled wheat. The results are shown in Table 2.

TABLE 2
TOXIC RESIDUES IN BODY TISSUES

Copper Carbonate (expressed as Copper)—

	1 (*a*)	1 (*b*)	Control
Liver	720 p.p.m.	600 p.p.m.	480 p.p.m.
Muscle	n.d.	12 „	8 „
Kidney	n.d.	16 „	12 „
Fat	n.d.	4 „	4 „

Ceresan (*Mercury*)—

	2 (*a*)	2 (*b*)	Control
Liver	92 p.p.m.	80 p.p.m.	0
Muscle	n.d.	0·2 „	0
Kidney	12 „	100 „	1·3 p.p.m.
Fat	n.d.	1·6 „	0

Fernasan (*T.M.T.D.*)—

	3 (*a*)	3 (*b*)	Control
Liver	n.d.	0·4 p.p.m.	n.d.
Muscle	n.d.	0	n.d.
Kidney	n.d.	0	n.d.
Fat	n.d.	0	n.d.

Hexabunt (*H.C.B.*)—

	4 (*a*)	4 (*b*)	Control
Liver	n.d.	210 p.p.m.	190 p.p.m.
Muscle	190 „	550 „	90 „
Kidney	n.d.	210 „	210 „
Fat	330 „	880 „	260 „

p.p.m. = parts per million. n.d. = not determined.

DISCUSSION

These trials confirm the basic safety of feeding pickled wheat to sheep, at least over a period of 12 weeks.

Weight losses occurred in all five groups, and were lowest in the control group and greatest in the Ceresan group; it appeared that low palatability of Ceresan pickled wheat was the reason for high losses in Group 2.

The mean weight losses in other pickled wheat feeding trials were not as high as those experienced at Muresk. Keast reported a 5 lb. weight loss over four months in his control group and a 6½ lb. weight loss in his copper carbonate group; whilst Shier et al, recorded at 14.2 lb. loss over 87 days in their control group and a 10.5 lb. loss in their Ceresan group; in the latter trial the sheep were said to be disinclined to eat the pickled grain only during the first seven days of feeding.

Under the Public Health Act Food and Drug regulations certain metal tolerances have been prescribed as a permissible minimum in foodstuffs offered for sale for human consumption. The level for copper is 30 parts per million and for mercury nil. No standards have been laid down for T.M.T.D. and H.C.B.

For the same substances the Agriculture Research Service of the U.S. Department of Agriculture exempts copper carbonate from its labelling restrictions, but prohibits the use of mercury, T.M.T.D. and H.C.B. in food or feedstuffs.

According to Beck (1956), normal liver copper levels of sheep range from 100 to 400 p.p.m. The low 30 p.p.m. set by the Food and Drug regulations is therefore somewhat surprising.

The liver copper levels obtained in these trials are much higher than normal. Although it may be considered that the 480 p.p.m. copper recorded in the control group is also high, this figure is close to the 81 to 750 p.p.m. copper range obtained from the livers of four healthy adult sheep selected at random at Muresk during 1959.

The levels of mercury in the livers and kidneys of the Ceresan group ranged from 12 to 100 p.p.m. The control group had no mercury in the liver but 1.3 p.p.m. in the kidney. Although high, these figures are much less than the 1,400 to 1,600 p.p.m. recorded by Shier et al. in the livers of their sheep fed Ceresan pickled wheat. Even the control sheep in their experiment yielded mercury liver levels of 30 to 50 p.p.m.

The levels of T.M.T.D. in tissues from the Fernasan group were nil or extremely low, but the levels of H.C.B. in the Hexabunt group were quite high; the significance of this is not easy to determine, as the Hexabunt control group also showed apparently quite high H.C.B. tissue levels.

SUMMARY

Sheep were fed wheat treated with four different fungicidal preparations, at two feeding rates, for 84 days.

No visible abnormalities were noted during this time or at post-mortem examination, although weight losses were recorded. Various animal tissues were chemically analysed for copper mercury, T.D.M.T. and H.C.B. The liver and kidney levels of mercury in particular were very high, where sheep were fed Ceresan pickled wheat.

Whilst the feeding of pickled wheat to sheep appears not to be associated with clinical disease, the indiscriminate use of treated seed for feeding sheep should be viewed with caution and the period of time during which it is made available should be limited. In view of the tendency of mercury to accumulate on animal tissues, the use of Ceresan pickled wheat should be avoided. As a further precaution and in order to avoid any possible public

health risk where the other pickling agents are concerned, it would be wise not to forward such stock to abattoirs for slaughter until several months after feeding of pickled wheat has been stopped.

ACKNOWLEDGMENTS

Our thanks are due to Mr. W. Southern, Principal, Muresk Agricultural College, for making sheep available for this trial; and to the Government Chemical Laboratory for analyses of tissues carried out on our behalf.

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LOOK FOR QUALITY IN PHENOTHIAZINE

FARMERS using phenothiazine should make sure they use only top quality preparations.

Phenothiazine has been the most widely used anthelmintic for the control of worms of sheep for the last 10 years. Although recent developments in this field promise definite improvements in the control of sheep parasitism, phenothiazine will, no doubt, continue to be widely used for many more years.

The drug has high efficiency against several of the important parasites of sheep and for some time should have a price advantage over newer anthelmintics.

A great deal of research has been carried out on the properties of phenothiazine in recent years, stimulated by the experience of many users that some lots of the drug are much less efficient than others in clearing out species of worms known to be susceptible to it.

It has been found that the anthelmintic efficiency of phenothiazine depends to a great degree on two physical characteristics:

(1) The degree of purity, and

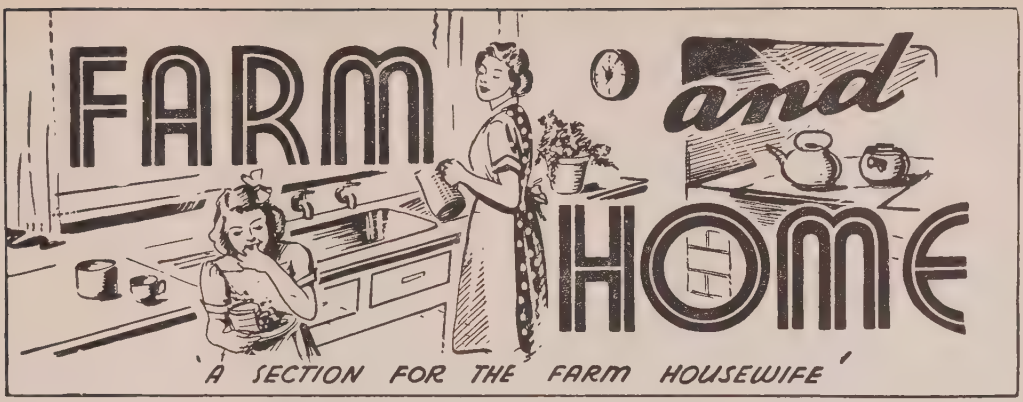
(2) the degree of fineness.

The activity of phenothiazine of 85 per cent. purity or more is usually satisfactory, while below this it is unpredictable and often poor.

Furthermore, it has been proved that the efficiency of the drug is proportional to the total surface area of the dose. Since a given mass of material increases its total surface area enormously as it is subdivided into smaller and smaller particles, the reason for the greatly increased anthelmintic activity of finely divided phenothiazine is obvious.

If users wish to get predictable results and maximum efficiency from this valuable drug, they must be assured that the product they buy has the necessary 85 per cent. (or more) purity and the desired degree of fineness in particle size. These are stated on the package of reputable brands of phenothiazine, such terms as "micronized," or "superfine," attesting to the essential property of fine particle size.

M. R. GARDINER,
Chief Veterinary Pathologist.



Christmas Gifts to Make

By O. EVANS SCOTT

MOST of us appreciate a small, thoughtful gift much more than a "bought in a hurry" gift. Here are a few suggestions for simple gifts that can be made, giving pleasure to both the maker and the recipient. They are also useful for stocking stalls for fetes.

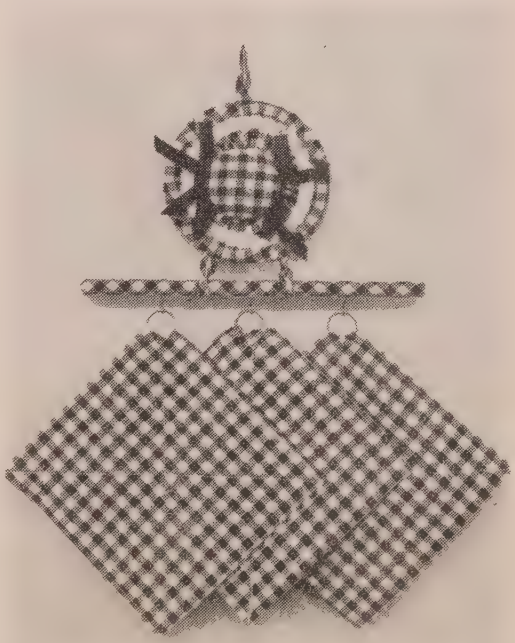
Kitchen Ideas

Practical things glamorised or made interesting are always acceptable gifts or good selling lines. Such things as aprons, pot holders and oven cloths are easily made in great variety. For added interest, make pot holders in a simple cat, tea-pot, hat, mitten, "crocodile's head" or other fancy shape. Attach a pot holder and small hand towel to an apron. Make a pair of holders and give two sets of removable covers made from bright, sturdy material.

Sets of basin covers (like shower caps) also sell well. Cut circles of plastic fabric approximately 6 in., 8 in. and 10 in. in diameter and machine stitch the elastic using a large stitch ½ in. in from the edge, stretching as you sew.

Drink coasters can be cut from thin foam plastic sheeting, using several colours and cutting with pinking shears. Parcel attractively in cellophane.

Milk jug covers can be quickly made by placing two square or triangular pieces of net together (edges hemmed first) so that the centres are double but points single; an eight or six pointed star results. Trim



An unusual pot-holder set such as this makes an attractive and useful kitchen gift

Simple, but a gift to grace any dressing table. One holds tissues, the other cotton balls

edges with feather stitch or crochet, and attach a bead to each point. Small square lace doyleys can be bought quite cheaply and made into pretty milk jug covers with a crochet edge and beads. (Choose a lace with a closely woven design.)

Children can use hessian to make pot holders, peg aprons and so on by closely working lazy daisy flowers or darning with wool as taught at school. One and a half cardboard plates can be sewn together to form a memo-holder, and trimmed with cut out pictures from magazines. Little girls may like to make dolls' flowerpots by arranging miniature everlastings or artificial flowers in plasticine or melted wax in small flower-pot shaped toothpaste tops. If the artificial flowers become faded or limp they can be restored with nail varnish.

Tissue Tidy

This simple gift would grace any beauty box or dressing table. Cut out two heart shapes with pinking shears in a dainty patterned plastic. Sew together ¼ in. in from the edges, inserting a loop for hanging at the centre top. Make a circle or a lengthwise slit in the centre of the upper piece, and fill with tissues or cotton balls (or give a pair, one of each). These could be made in material and lined with plastic, and trimmed with crochet, lace or embroidery if desired. To obtain a good heart shape, fold a piece of paper in half and draw one side. Cut double and open out to check shape. Re-cut if necessary until an attractive shape is the result. Other shapes can be used, and an attractive circular tidy can be made using two plastic doyleys put together with ribbon.

Coat Hangers.

Wooden coat hangers can be padded with cotton wool or wadding, covered with remnants of pretty material, and trimmed with ribbon bow, small artificial flowers, lavender sachet, moth ball holders, etc.

Another idea is to pad lightly and cover, then trim and provide extra padding by sewing rosettes of material along each edge. To make a rosette, join a 6 in. by 2 in. strip of material so that it forms a short cylinder. Press raw edges ¼ in. inwards, run a gathering thread through each fold, draw up thread and flatten circle. End threads securely.

Sew a strip of rosettes along each side of the hanger, attaching with oversew stitches across top and lower edges, and at each end of hanger. Paint or cover hook and trim with ribbon bow. Plain fabrics are best for this type; for extra effect a bead or sequin can be sewn in the centre of each rosette.

Foam plastic sheeting and plastic cord can also be used to cover coathangers. This is a simple job for children to do. Cut a 3½ in. strip, the length of the hanger plus two inches, pierce in the middle for hook, and place over the wood. Hold in

place with pins and secure with plastic cord threaded on a bodkin. Do simple running stitch or cross stitch starting and ending in the middle. Tie cord in a double bow to form trim. The plastic foam fabric can be cut with pinking shears, or scallops can be cut these are marked out by drawing around coins for even spacing and curves. A plain covered hanger could be trimmed with a scalloped foam plastic strip. Put the join at the top of the hanger and hide it with a half-inch strip, sewn tightly with oversews at half-inch intervals to form a soft double scallop.

Inch wide strips of foam plastic, cut with pinking shears, can also be used bandage-wise to cover coat hangers. Start at each end and join in the centre by twisting around the hanger firmly, overlapping the end and hiding the cut edges each time. Finish at the hook, cut and stitch to hold in place, and trim as before. A soft, thickly padded hanger is the result. Foam plastic covered hangers have an advantage over the taffeta-covered hangers in that frocks of the most slippery fabrics do not slide off them.

Clothes Brush

A very pretty and practical clothes brush can be made, again using a coat hanger and foam plastic. Being longer than the usual type of clothes brush, and curved, it is a very effective, easy-to-use dust and fluff remover.

Remove the hook from the coathanger after screwing it through to make a hole through the centre. Cover one end of the hanger with a two inch circle of foam plastic, then wrap plastic cord tightly around it, binding the end down on the underside, until the centre hole is reached. End by passing the cord through the hole and tying. Cut a sheet of foam plastic into a length two inches wider than half the hanger. Wrap this around the bare end of the hanger until the sheet is used and the end comes to the top. Using plastic cord, tie tightly round the foam at the centre of the hanger and just past the end so that there is a one inch frill of foam plastic formed at each edge. Trim along the join with a few small artificial flowers or ribbon bow, or foam plastic flowers can be made by cutting sixpence-sized circles. stitching a tuck in the edge of each and putting five together on a circle.

Dressing Table Tidy

For this an empty fruit or milk tin is required. Remove lid right to the rim, and see that there are no sharp edges on the inside. The tin is then covered with contact plastic baize and trimmed with bobble braid. Paint the inside of the tin and the top and lower rims, and glue a circle of felt on the base of the tin if desired. Cut the contact baize the depth of the tin between the rims and the circumference plus one inch in length. Peel the backing from the baize a little at a time and roll the baize around the tin, smoothing air bubbles from centre outwards. Baize must be cut absolutely straight and fit just to the rim. Glue the bobble braid around the upper rim, starching firmly, and sew across ends.

If desired, the inside of the tin could be lined with the baize too, and a lift-up lid could be attached. For the lid, cut a circle of stiff straw board the same size as the tin, and cover both sides with the plastic baize. Paint the edge or glue a narrow braid or cord around it. Attach lid to the tin with a 1 in. strip of baize before glueing the bobble braid in place. For a more feminine effect, place a piece of cottonwool or wadding on the inside of the lid and

Contact baize and trimmings can transform an empty tin into an attractive dressing table tidy

cover with a circle of satin or taffeta 2 in. bigger than the lid. If liked, quilt this by sewing through the strawboard and threading a small crystal bead on the needle on the inside before pulling through to the top. Catch stitch the raw edges on the top and cover with a circle of baize or material. Sew a plait of narrow ribbon or a narrow lace edging around the edge, joining at the hinge.

These ideas can also be used for making glove or trinket boxes, or sewing tidy. Any shaped cardboard box or tin can be used. A waste paper container can be made in the same way. The plastic contact baize fabric can transform empty press-in lid tins into attractive canisters. Sheep dip tins make good sized flour or sugar bins.

Sewing Companion

For a person about to travel, or a keen needlewoman, this is one of the handiest gifts possible. It is in the form of a small book which opens out to reveal needles, pins and other sewing implements. Small pieces of lace ribbon, hat elastic, cotton wadding, strawboard, and remnants of flannel and covering fabric are required. Cut two pieces of strawboard 5 in. by 4 in., and glue on to a 5 in. strip of material so that the 5 in. sides are $\frac{1}{4}$ in. apart, forming a book-like cover with a soft hinge. Round off the four outside corners. Make a pin booklet from two pieces of flannel 6 in. by 4 in., cut with pinking shears. Place a layer of wadding over the strawboard, then the lining material (9 in. by 6 in.) across which has been put a strip of ribbon sewn at $\frac{1}{2}$ in. and $\frac{1}{4}$ in. intervals. (These slots will have bodkin, needle threader, small scissors, tape measure and so on through them when the sewing companion is completed). Place the flannel pin booklet centrally and sew all together through the soft hinge. Put a layer of wadding then the outside covering on the outside turn in edges and topsew to the lining. Hide stitching around edges and down centre fold with lace or braid. Sew on a press stud to keep closed when not in use.

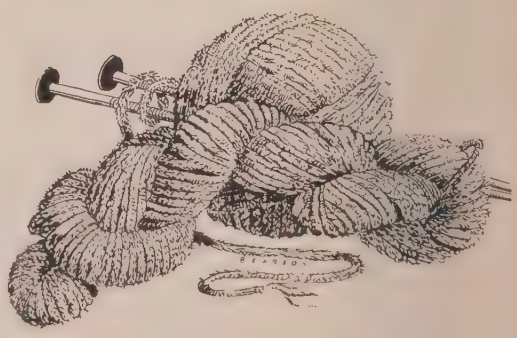
If desired, a thimble basket can be crocheted, starting with a ring of four chain. Do simple chain and treble in a spiral, increasing often for the first four rows then working nearly straight till thimble shaped. When a little longer than the thimble join a $1\frac{1}{2}$ in. length of hat elastic into a circle and crochet over this for the last row (so the thimble cannot be lost). End with 3 in. of chain and join across to other side to make basket handle. Sew the centre of the basket handle to the centre lower edge of the sewing companion. Equip the companion with pins, small safety pins, various sewing and darning needles, and so on. Wind lengths of black, white and coloured cotton threads around a neatly cut card and slip the card inside the folds.

Stoles and Scarves

Lightly embroider a half yard of 72 in. nylon tulle with rayon and tinsel threads to make an evening stole, or a quarter yard of 36 in. net or tulle for a scarf. Sequins and beads give added glamour; scatter a few small sprays at centre and ends. For a warm scarf or stole for winter, darn with wool through the holes of the net, making the under stitch small but varying the length of the overstitches to make patterns. Mohair and tinsel thread could make a very attractive winter evening scarf or stole. A plain pair of fabric gloves could be embroidered to match—fancywork down the side seam and little finger is unusual and effective.

Wrapping

When time and effort has been put into making an article, it is worth a little extra time and effort to wrap it attractively. Gift articles, cellophane wrapped, sell quicker than unwrapped lines; and no one could prefer undoing a brown paper bag to the much more interesting unwrapping of a pretty, rustling, ribbon-tied package.



LIST OF REGISTERED STOCK FOODS AND STOCK LICKS, 1960-61

By H. G. CARISS, Inspector of Feeding Stuffs

All foods for stock sold in Western Australia are required by the Feeding Stuffs Act, 1928-1955, to be registered annually with the Department of Agriculture. For the purposes of the Act, "Food for Stock" includes stock licks, which in turn embrace all preparations claimed to supply or primarily intended to supply mineral matter to stock.

The registration year for stock foods commences on July 1 each year. When making application for registration, manufacturers must submit a guaranteed analysis for each of their products, together with a list of ingredients used in each stock food. Regular inspection and sampling is carried out by officers of the Department to see that stock foods comply with the registered analysis.

Sellers of stock foods are required by the Feeding Stuffs Act, to ensure that to each package is clearly and conspicuously attached a label or brand showing the name and place of business of the manufacturer or importer, the registered brand and name of the food or lick and the registered analysis.

A list of stock foods and stocks licks which have been registered for the current registration year appears overleaf.

Before purchasing any food or lick, buyers are advised to consult the list of registered stock foods and stock licks from which a comparison of foods or licks of similar types can be made and also to ensure that packages are correctly labelled. If any doubts arise, inquiries should be made at the Department of Agriculture, where information concerning the provisions and requirements of the Feeding Stuffs Act, and advice on other aspects of stock feeding can be obtained.

Registered Stock Foods . . . 1960-61

Stock Food	Applic. No.	Brand	By whom registered	Materials from which made	Registered Analysis						Percentages of other substances claimed to be of Medicinal or Nutritive Value
					Crude Protein	Crude Fat	Crude Fibre	Sodium Chloride ($NaCl$)	Phosphoric Acid (P_2O_5)	Calcium (Ca)	
					(Min.) %	(Max.) (Min.) %	(Max.) %	(Max.) (Min.) %	(Max.) (Min.) %	(Max.) (Min.) %	%
A.—Simple Foods											
1.—*Meat Meals*											
Meat Meal	9	W.A.M.E.	W.A. Meat Export Works	Meat and bone	50·0	13·0	2·0	2·0	12·0	11·0	
								Nil	7·0	6·0	
Do.	64	Waruna	Rawling Agricultural Co.	Abattoir offal	50·0	14·0	2·0	1·0	13·5	10·0	
								Nil	9·5	8·0	
Do.	232	Coogee	Anchorage Butchers Pty. Ltd.	Waste meat products	36·0	18·0	2·0	1·0	12·5	12·5	
								Nil	9·0	8·0	
Do.	254	Watsonia	Watsons Foods Pty. Ltd.	Abattoir offal	27·0	19·7	1·5	....	17·3	15·5	
						17·7			15·3	13·5	
Do.	289	"Star" Brand	Fergusons (B-products) Pty. Ltd.	Green bone and dry blood	50·0	10·0	2·0				
Do.	298	Midland	Midland Junction Abattoir Board	Animal offal	55·0	15·0	2·0				
						12·0					
2.—*Meat and Bone Meals*											
Bone and Meat Meal ..	121	Apex ..	E. J. Fry Pty. Ltd.	Meat, bone and blood	37·0	12·0	2·0	1·0	15·0	15·0	
								Nil	5·0	5·0	
Meat and Bone Meal	154	Thomas	W. Thomas & Co. (W.A.) Ltd.	Meat and bone	40·0	12·0	2·0	....	15·0		
						9·0					
Do. do.	231	A. J. Bush & Co.	Elder Smith & Co. Ltd.	Bones and offal	45·0	11·0	2·0	·02			
						8·0					
Do. do.	235	T. B. & S.	T. Borthwick & Sons Ltd.	Animal offal	50·0	15·0	4·0	2·0	11·0	10·0	
						10·0		*Nil*	8·0	6·0	
Do. do.	288	"Mars" Brand	Fergusons (By-products) Pty. Ltd.	Green bone	37·0	12·0	2·0	....	15·0		
3.—*Whale Meals*											
Whale Meal "B" .	216	Cheynes Beach	Cheynes Beach Whaling Co. Ltd.	Whale meat and bones	58·0	6·0	5·0	2·5	12·0	12·0	
						4·0		1·0	10·0	9·0	
Whale Meal "B"	217	do.	do. do. do.	do. do.	64·0	6·0	5·0	2·5	12·0	12·0	
						4·0		1·0	10·0	9·0	
Whale Meal 64%	240	N.W.W.	Nor'-West Whaling Co. Ltd.	Humpback whales	64·0	5·0	1·0	1·5	10·0	11·0	
								0·5	7·0	8·0	
Whale Meal 62%	300	do.	do. do. do.	do.	62·0	5·0	1·0	1·5	10·0	11·0	
								0·5	7·0	8·0	
Whale Meal 60%	301	do.	do. do. do.	do.	60·0	5·0	1·0	1·5	10·0	11·0	
								0·5	7·0	8·0	
4.—*Whale Solubles*											
Whale Solubles 82%	241	do.	do. do. do.	do.	82·0	0·4	0·1	2·5	1·5	1·5	
								0·5	1·0	1·0	

Whale Solubles 79%	242	do.	do. do. do.	Bareen whales	79·0	0·4	0·1	2·5 0·5	1·5 1·0	1·5 1·0	
Whale Solubles 80%	299	do.	do. do. do.	do.	80·0	0·4	0·1	2·5 0·5	1·5 1·0	1·5 1·0	
5.—Fish Meals											
Crayfish Meal	119	Golden Gleam	Golden Gleam Fish Processing Co. Pty. Ltd.	Crayfish offal	40·0	8·0	....	4·5 3·0	3·0 1·0	11·0 7·0	
Cray Meal	233	Ancho	Anchorage Butchers Pty. Ltd.	Waste crayfish products	36·0	12·0 9·0	10·0	3·5 2·5	7·0 4·0	14·0 11·0	
Do.	302	Sea-Breeze	Fremantle Fishermans' Co-operative Society Ltd.	Crayfish offal	39·0	10·6	10·0	....	4·93	10·51	
6.—Milk Foods											
Skim Milk Powder	7	Peters	Peters Creameries (W.A.) Pty. Ltd.	Skim milk	35·3	0·25	1·0	1·78	2·41	1·29	Lactose 55·0
Dried Buttermilk Powder	11	Sunny West	Sunny West Co-op. Dairies Ltd.	Buttermilk	29·0	11·0 2·0	0·5	3·0 1·0	2·5 1·5	1·5 0·5	Carbohydrates 43·9
Dried Skim Milk Powder	12	do.	do. do. do.	Liquid milk	34·0	2·0 *Nil*	0·5	2·0 1·0	3·0 2·0	2·0 1·0	Lactose 48·0 (min.)
Buttermilk Powder	297	Watsonia	Capel Dairy Co. Ltd.	Buttermilk	29·3	7·0	*Nil*	1·37	2·05	1·05	Lactose 45·0
7.—Yeast Products											
Dried Brewer's Yeast Extract	97	Wesfarmers Hi-efficiency	Wesfarmers Co-op. Ltd.	Brewer's yeast	37·0	5·0					
Do. do.	126	Thomas	W. Thomas & Co. (W.A.) Ltd.	do.	40·0	1·2	1·5	....	....	....	Theamine 18 ug./gm. Riboflavin 30 ug./gm. Nicotine Acid 1600 ug./gm. Pyridoxine 85 ug./gm. Pantothenic Acid 200 ug./gm. Biotin 0·8 ug./gm.
8.—Wheat Products											
Wheat Meal	155	"C" Meal	do. do. do.	Wheat	8·0	....	10·0				
9.—Oil Seed Meals											
30% Linseed Sheep Cubes.	115	Wesfarmers Hi-efficiency	Wesfarmers Co-op. Ltd.	Linseed, pollard and molasses	30·0	3·0	2·0	....	2·0 0·5	2·0	
30% Linseed Oil Meal Sheep Nuts	174	Thomas	W. Thomas & Co. (W.A.) Ltd.	Pure linseed oil meal	30·0	12·0 6·0	12·0				
30% Pure Linseed Oil Meal	176	do.	do. do. do.	Linseed	30·0	12·0 6·0	12·0				
Meggit's Linseed Oil Meal	230	M.L.M.	Elder Smith & Co. Ltd.	do.	35·0	6·0 3·0	10·0				
Rape Meal	237	Hemphill Gray's	Hemphill Gray Oil Mills Pty. Ltd.	Rape seed	30·0	10·0 5·0	13·0				
Linseed Oil Meal	238	do.	do. do. do.	Linseed	30·0	12·0 6·0	12·0				
B.—Compound Foods											
1.—Molasses Products											
Proteinised Molasses Block	275	Molacrate	Wm. Houghton & Co. Ltd.	Magnesium, sulphur, phosphate, meat extractive from animal proteins, whey extract, calcium, cane, molasses, potassium, salt, cobalt, iodine, copper	17·5	3·0 *Nil*	*Nil*	5·5 4·0	4·5 2·0	4·5 2·0	Ash 14·4 Sugar 44·6 Copper (ppm) 4·0 min., 6·0 max. Cobalt (ppm) 2·0 min., 3·0 max. Potassium (ppm) 3·0 min., 6·0 max.
Molasapol	285	Mayco ..	The Maylands Milling Co. Pty. Ltd.	Molasses, bran and pollard	7·5	3·0 2·0	4·0	*Nil* *Nil*	1·0 0·5	1·0 0·4	
2.—Calf Foods											
Calf Food	1	Harper's Star	Robert Harper & Co. Ltd.	Wheat, oats, rice, barley, linseed, mustard, branning, whiting, salt, peas and condiments	12·0	2·5	10·0	2·0 1·0	2·5 1·0	1·0 0·25	

Stock Food	Applic. No.	Brand	By whom registered	Materials from which made	Registered Analysis						
					Crude Protein	Crude Fat	Crude Fibre	Sodium Chloride (NaCl)	Phosphoric Acid (P_2O_5)	Calcium (Ca)	Percentages of other substances claimed to be of Medicinal or Nutritive Value
					(Min.) %	(Max.) (Min.) %	(Max.) %	(Max.) (Min.) %	(Max.) (Min.) %	(Max.) (Min.) %	%
B.—Compound Foods— *continued*											
2.—Calf Foods—contd.											
Calf Food 20%	45	Millers	W. H. Milne & Co. Pty. Ltd.	Semolina, wheat meal, pollard, meat meal, milk powder, ground limestone, salt	20·0	5·0 2·5	4·0	1·0 0·5	1·5 0·5	4·0 1·0	Vitamin A 7,200,000 i.u./ton Vitamin D_3 2,360,000 i.u./ton Copper, cobalt Carbohydrates 66·45
Calf Food	53	Eve-lyn	Tropical Traders, :td.	Gristed, wheat, barley, rye, pollard, linseed, salt, sugar, chalk, tumeric, sodium bicarbonate, cream of tartar, foenugreek, coriander, copper sulphate, trace bole armenian	8·5	2·0	3·86	3·5 2·5	1·25 0·25	1·0 0·2	
Calf Mea	106	Wesfarmers Hi-efficiency	Wesfarmers Co-op. Ltd.	Pollard, wheat, oats, buttermilk, brewer's yeast, whale, peanut, linseed	20·0	3·0	3·0	2·0 0·5	2·3 1·5	1·5 1·0	Vitamin A 5,000 i.u./lb. Vitamin D_3 1,000 i.u./lb.
Baby Calf Milk	107	do.	do. do. do.	Skim milk, brewer's yeast, oats	30·0	1·0	2·0	2·0 1·0	1·5 1·5	0·9	Vitamin A 4,000 i.u./lb. Vitamin D_3 800 i.u./lb.
20% Protein Vitamised Antibiotic Calf Food	163	Thomas	W. Thomas & Co. (W.A.) Ltd.	Linseed meal, coconut meal, pollard, bone flour and/or "Christmasphos," oyster flour, salt, antibiotics	20·0	2·5	8·0	3·0 0·5	2·5 0·2	2·5 0·5	Vitamin A 6,000,000 i.u./ton Vitamin D_3 1,800,000 i.u./ton Manganese 60 ppm Cobalt 3 ppm Stabilised Iodine 1·2 ppm
20% Antibiotic Calf Pellets	164	do.	do. do. do.	Linseed meal, coconut meal, pollard, bone flour, "Christmas phos," oyster flour, salt, antibiotics	20·0	2·5	8·0	3·0 0·5	2·5 0·2	2·5 0·5	Vitamin A 6,000,000 i.u./ton Vitamin D_3 1,800,000 i.u./ton
Calf Food	192	P.P.	Picton Produce Pty. Ltd.	Oat meal, pollard, linseed, buttermilk, apac	18·0	5·0 3·0	7·5	0·5 0·2	0·3 0·2	0·4 0·2	Cobalt and Copper (trace)
Do.	195	Western	David Gray & Co. Ltd.	Malt, grains, milk powder, yeast, whale solubles, pollard, wheat, cereals, trace elements	16·0	6·0	7·5	1·5 0·5	1·5 0·5	1·0 0·15	
Kaf-O-Vite	309	Vita Lick	D.H.A. (Rural) Pty. Ltd.	Wheater and rice pollard, meat meal, peanut meal, wheat meal, calcium carbonate, bone char, sugar	16·0	7·0 6·0	8·0	0·05	0·7	....	Sugar 0·28 Lime (CaO) 1·6
3.—Cattle Foods											
Dairy Meal	44	Millers	W. H. Milne & Co. Pty. Ltd.	Bran, pollard, oats, barley, malt, combines, linseed meal, meat meal, ground limestone	16·0	5·0 3·0	10·0	1·0 0·5	2·5 1·0	3·0 1·0	Copper Cobalt
Cattle Food	54	Eve-lyn	Tropical Traders Ltd.	Gristed wheat, barley, rye, pollard salt, limestone, chalk, animal charcoal, sulphate of iron, copper sulphate, medicinal herbs	5·0	2·0 1·0	5·5	13·0 12·0	4·25 3·25	8·5 9·5	Sulphur 3·6
11% Dairy Meal	96	Masters Blue Ribbon	Wesfarmers Co-op. Ltd.	Bran, pollard, oats, whale bone, limestone, salt, urea, molasses, barley, rock phosphate	11·0	2·5	10·0	2·5 1·5	3·0 1·5	2·5 1·0	Copper (trace) Cobalts (trace)

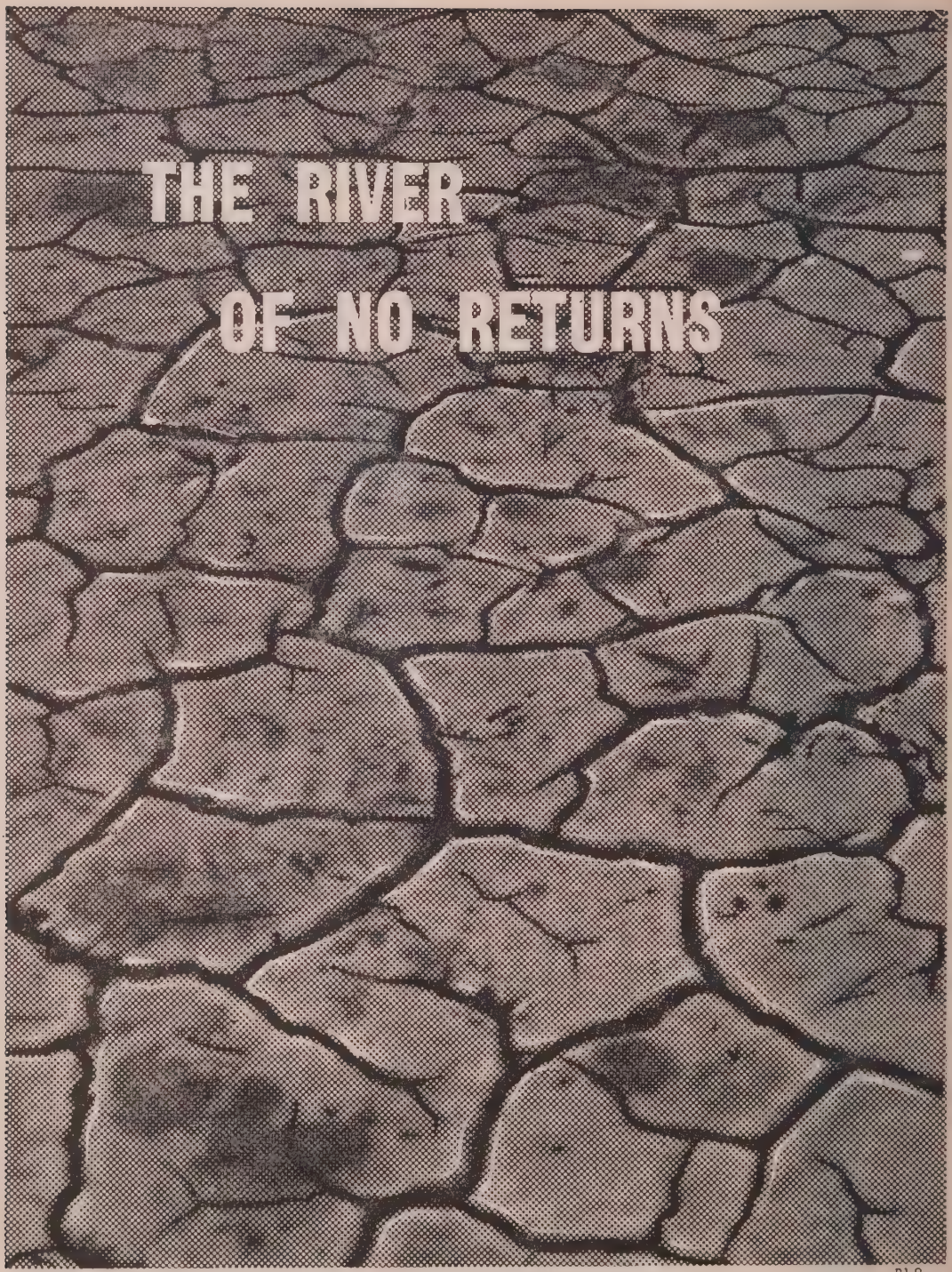
16% Dairy Meal	98	do.	do.	do.	do.	Bran, pollard, soya bean, oats, molasses, barley, urea, whale bone, limestone, salt, rock phosphate	16·0	2·5	10·0	2·5 1·5	3·0 1·5	2·5 1·0	
Stud Stock Cattle Concentrate	108	Wesfarmers Hi-efficiency	do.	do.	do.	Bran, cotton seed, peanut, linseed, whale bone, barley, molasses, phosphate, limestone, salt	30·0	2·0	10·0	1·5 0·5	2·0 1·0	3·0 1·0	
11% Sweetened Dairy Meal	109	do.	do.	do.	do.	Bran, pollard, oats, barley, urea, molasses, limestone, rock phosphate	11·0	2·5	10·0	2·5 1·5	3·0 1·5	2·5 1·0	Copper (trace) Cobalt (trace)
16% Sweetened Dairy Meal	110	do.	do.	do.	do.	Bran, pollard, oats, cotton seed, barley, meat, molasses, urea, salt, rock phosphate, limestone	16·0	2·5	10·0	2·5 1·5	3·0 1·5	2·5 1·0	
11% Protein Sweet Dairy Food	156	Thomas	W. Thomas & Co. (W.A.) Ltd.			Gristed grains, malt combings, molasses, oyster flour, salt, " Christmas phos "	11·0	1·5	10·0	2·0 1·0	2·5 1·0	4·0 1·0	Manganese 60 ppm Cobalt 3 ppm Stabilised Iodine 1·2 ppm
20% Protein Sweet Dairy Food	157	do.	do.	do.	do.	Bran, pollard, gristed grains, malt combings, urea, molasses, oyster flour, salt, " Christmas phos "	20·0	1·5	10·0	2·0 1·0	2·5 1·0	4·0 1·0	do. do.
16% Protein Sweet Dairy Food	158	do.	do.	do.	do.	do. do. do.	16·0	1·5	10·0	2·0 1·0	2·5 1·0	4·0 1·0	do. do.
11% Sweet Dairy Nuts	159	do.	do.	do.	do.	Gristed grains, malt combings, molasses, oyster flour, salt, " Christmas phos "	11·0	1·5	10·0	2·0 1·0	2·5 1·0	4·0 1·0	do. do.
16% Protein Sweet Dairy Nuts	161	do.	do.	do.	do.	Bran, pollard, gristed grains, malt combings, urea, molasses, oyster flour, salt, " Christmas phos "	16·0	1·5	10·0	2·0 1·0	2·5 1·0	4·0 1·0	do. do.
20% Sweet Dairy Nuts	162	do.	do.	do.	do.	do. do. do.	20·0	1·5	10·0	2·0 1·0	2·5 1·0	4·0 1·0	do. do.
32% Dairy Cake Concentrate	165	do.	do.	do.	do.	Linseed meal, peanut meal, coconut meal, whale meal, urea, pollard, oyster flour, salt, " Christmas phos "	32·0	1·5	5·0	5·0 2·0	8·5 3·5	9·0 4·0	Manganese 600 ppm Cobalt 30 ppm Stabilised Iodine 10·2 ppm
Sweet Concentrate	175	Med-B-Sweet	do.	do.	do.	Grain meals, oil meals, sweeting agents, cobalt chloride (sulphate)	10·0	0·5	2·5	*Nil*	*Nil*	*Nil*	Cobalt 15 ppm Total Sugars 37·8, equivalent to Molasses 63·0
Dairy Food (High Energy)	191	P.P.	Picton Produce Pty. Ltd.			Oat meal, bran, pollard, linseed, barley meal, salt, bone meal, calcium, molasses	11·0	4·0 3·0	12·5	0·7 0·4	0·3 0·1	0·3 0·1	Cobalt (trace) Copper (trace)
Linmeal	196	Western	David Gray & Co. Ltd.			Malt, grains, linseed meal, yeast, whale solubles, pollard, wheat cereals, cobalt chloride, copper sulphate, manganese sulphate	20·0	7·0	5·0	1·5 0·5	1·5 0·15		
4.—Sheep Foods													
Sheep Food	56	Eve-lyn	Tropical Traders Ltd.			Gristed wheat, barley, rye, salt, pollard, limestone, chalk, animal charcoal, molasses, iron sulphate, copper sulphate (trace), medicinal herbs	5·0	2·0 1·0	5·0	13·5 12·5	4·0 3·5	9·6 8·6	Sulphur 2·75 (max.)
Summer Sheep Cubes	111	Wesfarmers Hi-efficiency	Wesfarmers Co-op. Ltd.			Bran, lucerne, barley, wheat, oats, linseed, molasses, whale meal, urea, limestone, salt, rock phosphate	17·0	1·5	14·0	1·0 0·5	1·0 0·5	1·0 0·5	Copper 10 ppm Cobalt 1 ppm
Stud Breeders Sheep Cubes	112	do.	do.	do.	do.	Barley, bran, oats, cotton seed, urea, molasses, whale meal	20·0	2·0 1·5	10·0	1·0 0·5	1·0 0·5	1·5 1·0	Vitamin A 2,750 i.u./lb. Vitamin D_3 550 i.u./lb. Copper 10 ppm Cobalt 1 ppm
11% Protein Vitamised Maintenance Sheep Nuts	172	Thomas	W. Thomas & Co. (W.A.) Ltd.			Bran, pollard, grain meals, molasses, oyster flour, salt, " Christmas phos "	11·0	1·0	15·0	2·0 1·0	2·0 0·5	3·5 1·5	Manganese 60 ppm Cobalt 3 ppm Stabilised Iodine 1·2 ppm Vitamin A 6,000,000 i.u./ton Vitamin D_3 1,800,000 i.u./ton

Stock Food	Applic. No.	Brand	By whom registered	Materials from which made	Registered Analysis: Crude Protein	Crude Fat	Crude Fibre	Sodium Chloride (NaCl)	Phosphoric Acid (P_2O_5)	Calcium (Ca)	Percentages of other substances claimed to be of Medicinal or Nutritive Value
					(Min.) %	(Max.) (Min.) %	(Max.) %	(Max.) (Min.) %	(Max.) (Min.) %	(Max.) (Min.) %	%
B.—Compound Foods— *continued*											
4.—*Sheep Foods—contd.*											
"Solids" for Sheep	219	Min-A-Vit	Min-A-Vit Pty. Ltd.	Coconut meal, wheat germ, malt combings, meat meal, crushed wheat, "Min-A-Vit" sheep pack	14·0	3·0	6·0	1·6	5·24	10·8 (CaO)	Copper 0·030 Zinc 0·007 Iodine 0·012 Vitamin D_3 150 i.u./gm. Cobalt 0·012 Manganese 0·009
"Solids Plus" for Sheep	220	do.	do. do.	Coconut meal, wheat germ, malt combings, meat meal, crushed wheat, "Min-A-Vit" sheep plus pack	14·0	3·0	6·0	1·6	5·24	10·8 (CaO)	Copper 0·030 Zinc 0·007 Iodine 0·012 Vitamin D_3 150 i.u./gm. Cobalt 0·012 Manganese 0·009
Ewe and Lamb Sheep Nuts	239	Western	Hemphill Gray Oil Mills Pty. Ltd.	Linseed oil meal, rape meal, gristed grains, bran, pollard, molasses, urea, salt, calcium phosphate, cobalt sulphate	21·0	2·0	11·5	5·0 2·0	4·0 2·0	3·0 1·0	Cobalt (trace)
5.—*Poultry Foods*											
(a) *Chicken*											
Chick Starter Mash 18%	17	Milless	W. A. Milne & Co. Pty. Ltd.	Bran, pollard, oats, barley, wheat meal, wheat germ, whale meal, fish meal, milk powder, salt, lucerne	18·0	5·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 2·0	Vitamin A 4,800,000 i.u./ton Vitamin D_3 1,440,000 i.u./ton Ribon 5 gm./ton Part. acid 5 gm./ton Bascitracian 4 gm./ton Proc. Penicillin 4 gm./ton
Chick Starter Crumbles 18%	18	do.	do. do. do.	do. do. do.	18·0	5·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 2·0	do. do.
Chick Starter Granules 18%	19	do.	do. do. do.	do. do. do.	18·0	5·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 2·0	do. do.
Chick Grower Pellets 14%	50	do.	do. do. do.	Bran, pollard, wheat meal, oats, barley, whale meal, meat meal, rock phosphate, lucerne, shell dust, salt, manganese sulphate	14·0	5·0 3·0	7·0	1·5 0·5	3·0 1·0	3·0 1·0	Vitamin A 4,800,000 i.u./ton Vitamin D_3 1,440,000 i.u./ton
Chick Grower Crumbles 14%	51	do.	do. do. do.	do. do. do.	14·0	5·0 3·0	7·0	1·5 0·5	3·0 1·0	3·0 1·0	do. do.
Chick Grower Mash 14%	52	do.	do. do. do.	do. do. do.	14·0	5·0 3·0	7·0	1·5 0·5	3·0 1·0	3·0 1·0	do. do.
Chick Starter Mash	62	Jubilee	Jubilee Poultry Farm	Bone meal, wheat, bran, whale meal, yeast, milk, lucerne meal	16·0	1·7 1·12	3·5	0·5 0·38	3·0 2·6	1·5	Aureomycin Vitamin A Vitamin D
Growers Mash	63	do.	do. do.	Wheat, barley, oats, bone meal, milk, bran, lucerne meal	15·0	2·0 1·9	3·0	1·0 0·22	3·0 2·67	2·50 1·6	Vitamins A and D
16% Vitaminised Chick Mash	65	Wesfarmers Hi-efficiency	Wesfarmers Co-op. Ltd.	Wheat, barley, oats, bran, pollard, fish, whale, lucerne, minerals	16·0	3·0	7·0	1·0 0·4	2·3 1·0	2·0 0·8	Vitamin A 3,000 i.u./lb. Vitamin D_3 600 i.u./lb.

16% Vitaminised Chick Pellets	66	do.	do.	do.	do.	do.	do.	16·0	3·0	7·0	1·0 0·4	2·3 1·0	2·0 0·8	do. do.
16% Vitaminised Chick Crumbles	67	do.	do.	do.	do.	do.	do.	16·0	3·0	7·0	1·0 0·4	2·3 1·0	2·0 0·8	do. do.
17% Vitaminised Chick Mash	68	do.	do.	do.	do.	Bran, pollard, wheat, barley, oats, fish, whale, lucerne, antibiotics and minerals		17·0	3·0	7·0	1·0 0·4	2·3 1·0	2·0 0·8	Vitamin A 3,000 i.u./lb. Vitamin D_3 600 i.u./lb. Minerals
17% Vitaminised Chick Pellets	69	do.	do.	do.	do.	do.	do.	17·0	3·0	7·0	1·0 0·4	2·3 1·0	2·0 0·8	do. do.
17% Vitaminised Chick Crumbles	70	do.	do.	do.	do.	do.	do.	17·0	3·0	7·0	1·0 0·4	2·3 1·0	2·0 0·8	do. do.
Vitaminised Growers Mash	71	do.	do.	do.	do.	Bran, pollard, barley, wheat, oats, whale, minerals		14·0	3·0	7·0	1·0	2·3 1·2	1·5 1·0	Vitamin A 2,500 i.u./lb. Vitamin D_3 500 i.u./lb.
Vitaminised Growers Pellets	72	do.	do.	do.	do.	do.	do.	14·0	3·0	7·0	1·0	2·3 1·2	1·5 1·0	do. do.
Chick Mash	95	Wexham	do.	do.	do.	Bran, pollard, oats, wheat, meat, buttermilk, lucerne, bone, minerals		18·0	4·0	7·0	0·5 0·1	2·3 1·0	1·5 0·8	Vitamin A 2,000 i.u./lb. Vitamin D_3 180 i.u./lb.
Chick Starter (A and D_3)	122	Apex	E. J. Fry Pty. Ltd.			Bran, pollard, wheat meal, meat meal, bone meal, buttermilk, salt, ribon, antibiotics, gristed oats		17·0	3·0	6·0	1·0 0·25	3·0 1·1	3·0 1·0	Vitamin A 3,000 i.u./lb. Vitamin D_3 300 i.u./lb.
Growers Mash (A and D_3)	123	do.	do.	do.		Bran, pollard, wheat meal, meat meal, buttermilk, bone meal		15·0	3·0	6·0	1·0 0·25	3·0 1·1	3·0 1·5	do.
18% Antibiotic Vitamised Chick Crumbles + C.P.	129	Thomas	W. Thomas & Co. (W.A.) Ltd.			Bran, pollard, grain meals, wheat germ, meat meal, milk powder, lucerne meal, whale meal, fish meal, soya bean meal, oyster flour, riboflavin, antibiotics, bone flour, "Christmas phos," lucerne pollard, manganese, vitamin K, coccioستat		18·0	2·5	6·0	1·0 0·25	3·0 1·0	2·5 1·0	Vitamin A 6,000,000 i.u./ton Vitamin D_3 1,800,000 i.u./ton
18% Protein Antibiotic Vitamised	130	do.	do.	do.	do.	do.	do.	18·0	2·5	6·0	1·0 0·25	3·0 1·0	2·5 1·0	do.
14% Protein Vitamised Growers Crumbles	131	do.	do.	do.	do.	"Christmas phos," manganese sulphate, lucerne meat		14·0	2·5	6·0	1·0 0·5	3·5 1·0	3·75 0·5	Vitamin A 5,000,000 i.u./ton Vitamin D_3 1,500,000 i.u./ton
Chick Starter + C.P. 14% Protein Vitamised Chick Grower	132	do.	do.	do.	do.	Bran, pollard, gristed grains, wheat germ, wheat meal, lucerne meal, whale meal, salt, oyster flour, riboflavin, vitamin K, manganese, "Christmas phos"		14·0	2·5	6·0	1·0 0·05	3·5 1·0	3·75 0·5	do.
Chicken Grain	151	do.	do.	do.	do.	Wheat, maize, peas, shell grit		9·0	1·5	4·5				
Chicken All Mash	182	Morloy	R. B. Young Pty. Ltd.			Bran, pollard, wheat meal, whale meal, meat meal, bone and oyster flour, skim milk powder, antibiotic concentrate, sulphate of magnesia		15·0	3·0	6·0	2·0 0·25	3·5 1·0	3·25 1·5	Vitamin A 3,300 i.u./lb. Vitamin D_3 330 i.u./lb.
Growing Mash	188	do.	do.	do.	do.	Bran, pollard, wheat meal, whale meal, meat meal, minerals, riboflavin, bone flour, oyster flour, dried yeast		14·0	3·0	6·0	2·0 0·25	3·5 1·0	3·75 1·5	do.
Chick Starter	189	do.	do.	do.	do.	Bran, pollard, wheat meal, dried yeast, skim milk powder, shell grit, meat meal, whale meal, riboflavin, bone flour, antiotic, salt, manganese sulphate		18·0	3·0	6·0	2·0 0·25	3·5 1·0	3·75 1·0	do.
Do.	194	P.P.	Picton Produce Pty. Ltd.			Bran, pollard, wheat meal, oat meal, meat and bone meal, buttermilk, apac, vitamins A and D_2		16·0	4·0 2·5	5·0	0·5 0·2	0·8 0·5	0·75 0·5	

Stock Food	Applic. No.	Brand	By whom registered	Materials from which made	Registered Analysis: Crude Protein	Crude Fat	Crude Fibre	Sodium Chloride (NaCl)	Phosphoric Acid (P_2O_5)	Calcium (Ca)	Percentages of other substances claimed to be of Medicinal or Nutritive Value
B.—Compound Foods—*continued* 5.—*Poultry Foods—cont.* (a) *Chicken—continued*					(Min.) %	(Max.) (Min.) %	(Max.) %	(Max.) (Min.) %	(Max.) (Min.) %	(Max.) (Min.) %	%
Chick Starter Pellets	210	Boans	Boans Ltd.	Bran, pollard, crushed wheat, oat meal, meat meal, buttermilk, bone meal, antibiotics	16·0	5·0 3·0	7·0	1·0 *Nil*	2·3 1·3	0·18	Vitamin A 2,000 i.u./lb. Vitamin D 280 chick units/lb. Nicarbazine 0·0125%
Chicken Starter Mash	213	Altona	Altona Hatchery	Bran, wheat meal, pollard, oats, wheat germ, meat meal, whale meal, bone and oyster flour, riboflavin, pantothenic acid	16·0	4·0 2·0	6·0	1·0 0·15	2·5 1·2	1·5 0·5	Vitamin A 3,000 i.u./lb. Vitamin D 300 i.u./lb.
Chick Food	236	H. & C.	Haynes and Clements	Wheat, maize, peas, grit	9·0	3·0 1·5	4·5	....	....	(CaO) 3·0	
Vitamised 16% Chick Starter	258	Richfoods	A. Richards & Co.	Meat meal, buttermilk, bran, pollard, wheat meal, yeast, bone meal, ribon	16·0	5·0 3·0	7·0	1·0 *Nil*	3·0 1·0	3·0 0·8	Vitamin A 2,000 i.u./lb. Vitamin D_3 500 i.u./lb.
Vitamised 15% Growers Mash	259	do.	do. do.	Wheat meal, meat meal, whale meal, bran, pollard, oat meal, bone meal	15·0	5·0 3·0	7·0	1·0 *Nil*	3·0 1·0	3·0 0·8	do.
Chick Starter	264	Symonds	E. Symonds	Bran, pollard, grain meals, wheat germ, meat meal, milk powder, lucerne meal, whale meal, fish meal, soya bean meal, oyster flour, riboflavin, antibiotics, bone flour, "Christmas phos," lucerne pollard, manganese, vitamin K, coccidiostat	18·0	2·5	6·0	1·5 0·25	3·0 1·0	2·5 1·0	Vitamin A 6,000,000 i.u./ton Vitamin D_3 1,800,000 i.u./ton
Growers Mash	265	do.	do.	Bran, pollard, gristed grains, wheat germ, meat meal, whale meal, oyster flour, riboflavin, "Christmas phos," manganese, sulphate, lucerne meal	15·0	2·5	6·0	1·25 0·5	3·5 1·0	3·75 0·5	
Special Chick Food	274	Parsons	Parson Foods (W.A.) Pty. Ltd.	Wheat, greenpeas, maize, sorghum seed, shell grit	8·0	1·5 0·5	4·5	0·5 *Nil*	1·0 0·5	4·0 3·0	
Growell A and D_3	278	Chicker Mix	Barrow Linton Pty. Ltd.	Bran, pollard, rolled wheat, oat meal, meat meal, bone meal	14·0	5·0 3·0	7·0	1·0 *Nil*	2·3 1·2	1·5 1·0	Vitamin A 2,000 i.u./lb. Vitamin D_3 100 i.u./lb.
Special Chick Starter	286	Mayco	Maylands Milling Co. Pty. Ltd.	Bran, pollard, wheat meal, meat meal, bone meal, shell grit, salt, riboflavin, milk, vitamins A and D_3	17·0	4·0 3·5	5·0	1·0 0·75	3·0 2·5	3·5 3·0	Manganese Sulphate 0·0125
Growing Mash	287	do.	do. do. do.	do. do. do.	15·0	4·0 3·5	5·0	1·0 0·75	3·0 2·5	3·5 3·0	do. do.
Fortified Growing Mash	291	Bairds	Bairds Pty. Ltd.	Bran, pollard, wheat meal, meat meal, salt, bone meal, oyster flour, riboflavin, vitamins A and D_3	15·0	4·0 3·5	5·0	1·0 0·75	3·0 2·5	3·5 3·0	Manganese sulphate 0·025 Terramycin 0·075
Chick Grower Crumbles 15%	292	do.	do. do.	Bran, pollard, wheat meal, meat meal, oats, barley, whale meal, rock phosphate, lucerne, shell dust	15·0	5·0 3·0	7·0	1·5 0·5	3·0 1·0	3·0 1·0	Vitamin A 4,800,000 i.u./ton Vitamin D_3 1,440,000 i.u./ton

Chick Starter Crumbles 18%	295	do.	do.	do.	Bran, pollard, wheat meal, oats, barley, salt, wheat germ, meat meal, whale meal, milk powder, lucerne, manganese sulphate	18·0	5·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 2·0	Vitamin A 4,800,000 i.u./ton Vitamin D_3 1,440,000 i.u./ton Ribon 5 gms./ton Pant. Acid 5 gms./ton Bacitracin 4 gms./ton Penicillin 4 gms./ton
Fortified Chick Starter	296	do.	do.	do.	Bran, pollard, meat meal, whale meal, butterfat, bone meal, oyster flour, salt, riboflavin, vitamins A and D_3	17·0	4·0 3·5	5·0	1·0 0·75	3·0 2·5	3·5 3·0	Manganese Sulphate 0·025 Terramycin 0·075
(b) *Laying*													
Lay Mash 16% A + D_3	28	Millers	W. H. Milne & Co. Pty. Ltd.		Bran, pollard, wheat meal, oats, barley, whale meal, meat meal, rock phosphate, salt, lucerne, shell dust, manganese sulphate	16·0	5·0 3·0	7·0	1·5 0·5	3·0 1·0	3·5 2·0	Vitamin A 4,800,000 i.u./ton Vitamin D_3 1,440,000 i.u./ton
Lay Mash 16% A + D_3 (Special No. 1)	29	do.	do.	do. do.	do. do. do.	16·0	5·0 3·0	7·0	1·5 0·5	3·0 2·0	3·5 2·0	do.
Lay Mash 18% A + D_3 (Special No. 1)	30	do.	do.	do. do.	do. do. do.	18·0	5·0 3·0	7·0	1·5 0·5	3·0 2·0	3·5 2·0	Vitamin A 7,200,000 i.u./ton Vitamin D_3 2,360,000 i.u./ton
Lay Mash 20% A + D_3 (Special No. 1)	31	do.	do.	do. do.	do. do. do.	20·0	5·0 3·0	7·0	1·5 0·5	3·0 2·0	5·0 2·0	Vitamin A 9,600,000 i.u./ton Vitamin D_3 2,880,000 i.u./ton
Lay Mash 16% A + D_3 (Special No. 2)	32	do.	do.	do. do.	do. do. do.	16·0	5·0 3·0	7·0	1·5 0·5	3·0 2·0	3·5 2·0	Vitamin A 4,800,000 i.u./ton Vitamin D_3 1,440,000 i.u./ton
Lay Pellets 16%	33	do.	do.	do. do.	do. do. do.	16·0	7·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 2·0	
Lay Pellets 16% A + D_3	34	do.	do.	do. do.	do. do. do.	16·0	7·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 2·0	do.
Lay Pellets 16% A + D_3 (Special No. 1)	35	do.	do.	do. do.	do. do. do.	16·0	7·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 2·0	do.
Lay Pellets 16% A + D_3 (Special No. 2)	36	do.	do.	do. do.	do. do. do.	16·0	7·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 2·0	do.
Breeders Mash 18%	38	do.	do.	do. do.	do. do. do.	18·0	5·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 1·0	Vitamin A 7,200,000 i.u./ton Vitamin D_3 2,300,000 i.u./ton Vitamin E (25), Plant Acid, Ribon, Pyridoxine, Folic Acid
Breeders Pellets 18%	39	do.	do.	do. do.	do. do. do.	18·0	5·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 1·0	do. do.
Lay Pellets 20% A + D_3 (Special No. 1)	46	do.	do.	do. do.	do. do. do.	20·0	5·0 3·0	7·0	1·5 0·5	3·0 2·0	5·0 2·0	Vitamin A 9,600,000 i.u./ton Vitamin D_3 2,880,000 i.u./ton
Lay Pellets 18% A + D_3 (Special No. 1)	47	do.	do.	do. do.	do. do. do.	18·0	5·0 3·0	7·0	1·5 0·5	3·0 2·0	3·5 2·0	Vitamin A 7,200,000 i.u./ton Vitamin D_3 2,360,000 i.u./ton
Laying Mash 16%	48	do.	do.	do. do.	do. do. do.	16·0	5·0 3·0	7·0	1·5 0·5	3·0 1·0	3·5 2·0	
Laying Mash No. 1	59	Wrights	Wrights Ltd.	....	Bran, pollard, wheat meal, meat meal, salt, whale meal, bone meal, gristed oats, oyster flour, lucerne meal	16·0	6·0 3·0	7·0	1·5 0·75	3·0 1·0	3·5 1·0	
Vitamins A + D_3 Fortified Laying Mash No. 1	60	do.	do.	....	do. do. do.	16·0	6·0 3·0	7·0	1·5 0·75	3·0 1·0	3·5 1·0	Vitamin A 6,000,000 i.u./ton Vitamin D 6,000,000 i.u./ton
Layers Mash	61	Jubilee	Jubilee Poultry Farm		Wheat, barley, oats, bran, bone meal, oyster flour, lucerne and whale meal	15·0	2·0 1·8	4·0	1·0 0·31	3·0 2·61	2·50 2·48	Vitamins A and D



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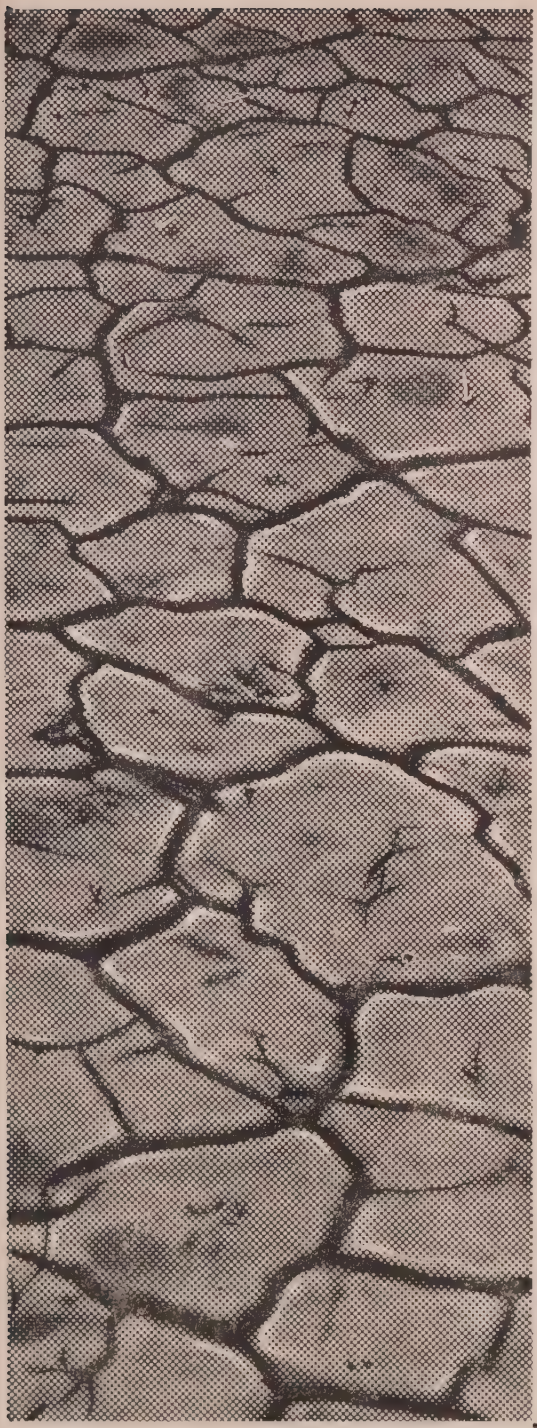

In the perilously near future this could be the dry, parched bed of an important river. One, of many, that today gives life to rich valley pastures and crops.

Just twenty years from now, we could feel the dry, dusty, arid pinch — The Great Thirst.

With population, food production and industry increasing tremendously, more and more demands will be made on water — the demand will increase by almost 50% in a mere ten years. *Yet, our natural supply is limited;* a supply that must yield a steadily diminishing return.

This situation calls for increasing effort to conserve water, eliminate waste and to expand our skill and knowledge in the proper use of water.

To assist progress, Hardie's Fibrolite Pipes come into the picture. Because they are readily available throughout Australia, because they are cheaper, more work can be done often years ahead of calculations. Hardie's Fibrolite Pipes — years ahead for the years ahead — to meet The Great Thirst.

HARDIE'S 'Fibrolite' Pipes
ASBESTOS-CEMENT

JAMES HARDIE & COY. PTY. LTD.

Rapidly supplying the national need in water distribution throughout Australia.

P1.9

Stock Food	Applic. No.	Brand	By whom registered	Materials from which made	Registered Analysis: Crude Protein	Crude Fat	Crude Fibre	Sodium Chloride (NaCl)	Phosphoric Acid (P_2O_5)	Calcium (Ca)	Percentages of other substances claimed to be of Medicinal or Nutritive Value
					(Min.) %	(Max.) (Min.) %	(Max.) %	(Max.) (Min.) %	(Max.) (Min.) %	(Max.) (Min.) %	%
B.—Compound Foods— *continued*											
5.—*Poultry Foods—cont.*											
(b) *Laying—continued*											
All Mash	73	Wesfarmers Hi-efficiency	Wesfarmers Co-op. Ltd.	Bran, pollard, wheat, oats, lucerne, clover, whale, meat meal, shell dust, minerals	16·0	4·0	7·0	1·0 0·4	3·5 2·0	3·0 2·0	
All Mash Pellets	74	do.	do. do. do.	Bran, pollard, wheat, barley, oats, lucerne, clover, whale, meat meal, shell dust, minerals	16·0	4·0	7·0	1·0 0·4	3·5 2·0	3·0 2·0	
Vitamised All Mash	75	do.	do. do. do.	do. do. do.	16·0	4·0	7·0	1·0 0·4	3·5 2·0	3·0 2·0	Vitamin A 3,300 i.u./lb. Vitamin D_3 650 i.u./lb.
Vitamised All Mash Pellets	76	do.	do. do. do.	do. do. do.	16·0	4·0	7·0	1·0 0·4	3·5 2·0	3·0 2·0	do.
Vitamised Hi Protein Mash	77	do.	do. do. do.	Bran, pollard, wheat, oats, barley, lucerne, whale and minerals	20·0	7·0 3·0	8·0	0·5 0·4	5·0 3·0	5·0 3·0	Vitamin A 5,100 i.u./lb. Vitamin D_3 1,000 i.u./lb.
Vitamised Hi Protein Pellets	78	do.	do. do. do.	do. do. do.	20·0	7·0 3·0	8·0	0·5 0·4	5·0 3·0	5·0 3·0	do.
Special Layers All Mash	89	do.	do. do. do.	Bran, pollard, wheat, oats, barley, lucerne, meat, whale and minerals	18·0	4·0	7·0	1·0 0·4	2·5 1·7	3·0 2·0	Vitamin A 4,000 i.u./lb. Vitamin D_3 800 i.u./lb.
Special Layers All Mash Pellets	90	do.	do. do. do.	do. do. do.	18·0	4·0	7·0	1·0 0·4	2·5 1·7	3·0 2·0	do.
Vitamised Breeders Mash	91	do.	do. do. do.	Wheat, barley, bran, oats, pollard, whale, soya beans, lucerne, minerals	18·0	5·0	7·0	2·0	4·0 2·0	2·5 1·0	Vitamin A 3,400 i.u./lb. Vitamin D_3 700 i.u./lb.
Vitamised Breeders Pellets	92	do.	do. do. do.	do. do. do.	18·0	5·0	7·0	2·0	4·0 2·0	2·5 1·0	do.
Deworming Mash	93	do.	do. do. do.	Bran, pollard, wheat, barley, whale, lucerne, oats, clover, shell dust, killworm, minerals	16·0	2·0	7·0	2·0 0·5	2·0 0·1	2·0 0·1	Vitamin A 3,000 i.u./lb. Vitamin D_3 600 i.u./lb.
Deworming Pellets	94	do.	do. do. do.	do. do. do.	16·0	2·0	7·0	2·0 0·5	2·0 0·1	2·0 0·1	do.
Laying Mash (A + D_3)	120	Apex ..	E. J. Fry Pty. Ltd.	Wheat meal, bran, pollard, meat meal, oyster flour, whale meal, bone meal	16·0	3·0	6·0	1·0 0·25	3·0 1·1	3·0 2·0	Vitamin A 3,000 i.u./lb. Vitamin D_3 300 i.u./lb.
Laying Mash	124	do.	do. do.	Bran, pollard, wheat meal, meat meal, oyster flour, bone meal, whale meal	16·0	3·0	6·0	1·0 0·25	3·0 1·1	3·0 2·0	
16% Protein Laying Pellets No. 1 (All Pellets)	133	Thomas	W. Thomas & Co. (W.A.) Ltd.	Bran, pollard, gristed grains, wheat germ, whale meal, lucerne meal, meat meal, oyster flour, "Christmas phos," manganese sulphate, salt	16·0	2·5	6·0	2·0 0·25	3·5 1·0	3·75 1·0	
16% Protein Vitamised Laying Pellets No. 1 (All Pellets)	134	do.	do. do. do.	do. do. do.	16·0	2·5	6·0	2·0 0·25	3·5 1·0	3·75 1·0	Vitamin A 6,000,000 i.u./ton Vitamin D_3 1,800,000 i.u./ton

16% Protein Laying Mash No. 1 (All Mash)	135	do.	do.	do.	do.	do.	do.	do.	16·0	2·5	6·0	2·0 0·25	3·5 1·0	3·75 1·0	
16% Protein Vitamised Laying Mash No. 1 (All Mash)	136	do.	do.	do.	do.	do.	do.	do.	16·0	2·5	6·0	2·0 0·25	3·5 1·0	3·75 1·0	do.
16% Special "Golden Yolk" Laying Pellets	137	do.	do.	do.	do.	Bran, pollard, gristed grains, whale meal, meat meal, dehydrated lucerne meal, oyster flour, "Christmas phos," manganese sulphate, yolk pigmenter			16·0	2·5	6·0	1·0 0·25	3·5 1·0	3·75 1·0	do.
16% Special "Golden Yolk" Laying Mash	138	do.	do.	do.	do.	do.	do.	do.	16·0	2·5	6·0	1·0 0·25	3·5 1·0	3·75 1·0	do.
20% Protein Laying Pellets	145	do.	do.	do.	do.	Bran, pollard, gristed grain, wheat germ, whale meal, lucerne meal, meat meal, oyster flour, "Christmas phos," manganese sulphate, salt			20·0	2·5	6·0	2·0 0·5	7·0 2·0	7·5 2·0	
20% Protein Vitamised Laying Pellets	146	do.	do.	do.	do.	do.	do.	do.	20·0	2·5	6·0	2·0 0·5	7·0 2·0	7·5 2·0	Vitamin A 12,000,000 i.u./ton Vitamin D_3 3,600,000 i.u./ton
20% Protein Laying Mash	147	do.	do.	do.	do.	do.	do.	do.	20·0	2·5	6·0	2·0 0·5	7·0 2·0	7·5 2·0	
40% Vitamised Universal Poultry Concentrate	148	do.	do.	do.	do.	Whale meal, meat meal, fish meal, oyster flour, manganese, sulphate, riboflavin, trace minerals, "Christmas phos," milk powder			40·0	9·0	1·5	0·4 0·2	12·5 8·5	20·5 18·5	Vitamin A 40,000,000 i.u./ton Vitamin B_2 12 micrograms/gram Vitamin D_3 4,000,000 i.u./ton
20% Protein Vitamised Laying Mash	149	do.	do.	do.	do.	Bran, pollard, gristed grains, wheat germ, lucerne meal, meat meal, oyster flour, salt, manganese sulphate, "Christmas phos"			20·0	2·5	6·0	2·0 0·5	7·0 2·0	7·5 2·0	Vitamin A 12,000,000 i.u./ton Vitamin D_3 3,600,000 i.u./ton
18% Breeders Pellets	150	do.	do.	do.	do.	Bran, pollard, grain meals, whale meal, meat meal, milk powder, liver meal, lucerne meal, "Christmas phos," oyster flour, salt, manganese sulphate, riboflavin, vitamin E			18·0	2·5	6·0	1·0 0·5	3·75 1·0	3·75 1·0	Vitamin A 6,000,000 i.u./ton Vitamin D_3 1,800,000 i.u./ton
16% Protein Laying Pellets	178	Morloy	R. B. Young Products Pty. Ltd.			Bran, pollard, gristed grains, whale meal, solubles, meat meal, oyster flour, bone flour, phosphate, wheat germ, lucerne			16·0	2·5	6·0	2·0 0·5	3·5 0·75	3·75 1·0	
16% Protein Vitamised Laying Pellets	179	do.	do.	do.	do.	do.	do.	do.	16·0	2·5	6·0	2·0 0·5	3·5 0·75	3·75 1·0	Vitamin A 3,300 i.u./lb. Vitamin D_3 300 i.u./lb.
Breeders Mash	181	do.	do.	do.	do.	Wheat meal, bran, pollard, whale meal, meat meal, skim milk powder, manganese sulphate, riboflavin, lucerne			18·0	3·0	6·0	2·0 0·25	3·5 1·0	3·75 1·5	do.
H.P. 20% Protein Vitamin Fortified A + D_3	185	do.	do.	do.	do.	Wheat meal, bran, pollard, whale meal and solubles, meat meal, oyster flour, bone meal, phosphate, minerals, salt, lucerne			20·0	3·0	6·0	2·0 0·25	3·5 1·0	3·75 1·5	do.
Laying Mash Vitamin Fortified (A + D_3)	186	do.	do.	do.	do.	Wheat meal, bran, pollard, whale meal and solubles, meat meal, bone flour, phosphate, minerals, oyster flour, salt, lucerne			16·0	3·0	6·0	2·0 0·25	3·5 1·0	3·75 1·75	do.
Laying Mash	187	do.	do.	do.	do.	do.	do.	do.	16·0	3·0	6·0	2·0 0·25	3·5 1·0	3·75 1·5	
Do.	193	P.P.	Picton Produce Pty. Ltd.			Bran, pollard, meat meal, oat meal, bone meal, wheat meal, ground limestone, salt, apac, buttermilk, vitamins A + D			15·0	5·0 3·0	7·0	0·5 0·2	0·75 0·5	0·6 0·5	
Laying Mash No. 1	252	Gardner's	Gardner Bros. Pty. Ltd.			Bran, pollard, wheat meal, meat meal, barley, oats, whale meal, lucerne, shell dust, salt, rock phosphate, manganese sulphate			16·0	5·0 3·0	6·0	1·5 0·5	3·0 1·0	1·0 *Nil*	

Stock Food	Applic. No.	Brand	By whom registered	Materials from which made	Registered Analysis: Crude Protein	Crude Fat	Crude Fibre	Sodium Chloride (NaCl)	Phosphoric Acid (P_2O_5)	Calcium (Ca)	Percentages of other substances claimed to be of Medicinal or Nutritive Value
B.—Compound Foods—*continued*					(Min.) %	(Max.) (Min.) %	(Max.) %	(Max.) (Min.) %	(Max.) (Min.) %	(Max.) (Min.) %	%
5.—*Poultry Foods—cont.*											
(b) *Laying—continued*											
Vitamised 20% Laymash	255	Richfoods	A. Richards & Co.	Wheat meal, meat meal, whale meal, bran, pollard, oat meal, bone meal, oyster flour	20·0	10·0 6·0	7·0	1·0 *Nil*	4·0 1·0	3·5 1·5	Vitamin A 2,000 i.u./lb. Vitamin D_3 500 i.u./lb.
Vitamised 16% Laymash	256	do.	do. do.	do. do. do.	16·0	6·0 4·0	7·0	1·0 *Nil*	3·5 2·3	2·5 2·0	do.
16% Laymash	257	do.	do. do.	do. do. do.	16·0	6·0 4·0	7·0	1·0 *Nil*	3·5 2·3	2·5 2·0	
Laying Pellets	266	Symonds	E. Symonds	Bran, pollard, gristed grains, wheat germ, whale meal, lucerne meal, meat meal, oyster flour, "Christmas-Phos," salt, manganese sulphate	16·0	2·5	6·0	2·0 0·25	3·5 1·0	3·75 1·0	
Laying Mash	267	do.	do.	do. do. do.	16·0	2·5	6·0	2·0 0·25	3·5 1·0	3·75 1·0	
Do.	273	Parsons	Parson Foods (W.A.) Pty. Ltd.	Wheat, pollard, bran, whole meal, shell grit, salt, barley, oats	16·0	2·5	10·0	2·0	3·5	3·75	
Egglayer A + D_3	276	Chicker Mix	Barrow Linton Pty. Ltd.	Bran, pollard, rolled wheat, gristed oats, meat meal or whale solubles, bone meal, oyster flour	16·0	6·0 4·0	7·0	1·0 0·4	3·5 2·0	3·0 2·0	Vitamin A 3,300 i.u./lb. Vitamin D_3 450 AO AC chick units/lb.
Vitalizer "A" A + D_3	277	do.	do. do. do.	Bran, pollard, cracked wheat, oat meal, wheat meal, buttermilk, bone meal, antibiotics, riboflavin, anti coccidiostats	15·0	5·0 3·0	7·0	1·0 0·4	2·3 1·0	2·0 0·8	Vitamin A 2,000 i.u./lb. Vitamin D_3 400 AO AC Chick units/lb.
Laying Mash	279	Mayco	Maylands Milling Co. Pty. Ltd.	Bran, pollard, wheat meal, meat meal	16·0	4·0 3·5	5·0	1·0 0·75	3·0 2·5	3·5 3·0	
Special Laying Mash	280	do.	do. do. do.	Bran, pollard, wheat meal, meat meal, bone meal, shell grit, salt	17·0	4·0 3·5	5·0	1·0 0·75	3·0 2·5	3·5 3·0	
Laying Pellets	281	do.	do. do. do.	do. do. do.	16·0	4·0 3·5	5·0	1·0 0·75	3·6 2·5	3·5 3·0	
Special Laying Mash	290	Bairds	Bairds Pty. Ltd.	Bran, pollard, wheat meal, meat meal, bone meal, oyster flour, salt	17·0	4·0 3·5	5·0	1·0 0·75	3·0 2·5	3·5 3·0	
Laying Pellets 16% A and D_3	294	do.	do.	Bran, pollard, wheat meal, oats, barley, whale meal, meat meal, rock phosphate, lucerne meal, shell dust, salt, manganese sulphate	16·0	5·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 2·0	Vitamin A 6,000,000 i.u./ton Vitamin D_3 2,400,000 i.u./ton

(c) *Fattening*												
Broiler Pre-Starter Mash 24%	16	Millers	W. H. Milne & Co. Pty. Ltd.			Wheat meal, oats, barley, whale meal, fish meal, milk powder, lucerne, salt	24·0	5·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 1·5	Vitamin A 9,000,000 i.u./ton Vitamin D_3 3,600,000 i.u./ton Zoamix, Potassium Chloride, Neftin, Nit. K., Choline, Methionine, Manganese Sulphate, Zinc Oxide, Vitamin B12, Ribon, Pant. Acid, Bacitracin, Proc. Penicillin, Vitamin E (25), Macin, Pyridoxine, Folic Acid
Broiler Starter Mash 20%	24	do.	do.	do.	do.	Wheat meal, oats, barley, whale meal, fish meal, milk powder, lucerne, salt, manganese sulphate	20·0	7·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 1·0	Vitamin A 4,800,000 i.u./ton Vitamin D_3 1,440,000 i.u./ton Choline, Methionine Zinc Oxide, Vitamin B12, Ribon, Pant. Acid, Bachracin, Proc. Penicillin, Vitamin E (25), Miacin, Pyridoxine, Folic Acid, Vitamin K
Broiler Starter Crumbles 20%	25	do.	do.	do.	do.	do.	do.	do.	20·0	7·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 1·0	do. do.
Broiler Finisher Mash 18%	26	do.	do.	do.	do.	Wheat meal, barley, oats, whale meal, fish meal, wheat germ, milk powder, lucerne, salt, manganese sulphate	18·0	7·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 1·0	Vitamin A 4,800,000 i.u./ton Pro. Penicillin Vitamin D_3 1,440,000 i.u./ton Bacitracin
Broiler Finisher Crumbles 18%	27	do.	do.	do.	do.	do.	do.	do.	18·0	7·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 1·0	do. do.
Fattening Mash 13%	37	do.	do.	do.	do.	Bran, pollard, wheat meal, oats, barley, whale meal, meat meal, rock phosphate, salt, lucerne, shell dust, manganese sulphate	13·0	5·0 3·0	7·0	1·5 0·5	3·0 1·0	3·5 1·0	Vitamin A 4,800,000 i.u./ton Vitamin D_3 1,440,000 i.u./ton
Broiler Finisher Pellets 18%	49	do.	do.	do.	do.	Wheat meal, barley, oats, whale meal, fish meal, wheat germ, milk powder, lucerne, salt, manganese, sulphate	18·0	7·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 1·0	Vitamin A 4,800,000 i.u./ton Vitamin D_3 1,440,000 i.u./ton Pro. Penicillin, Bacitracin
Broiler Starter Mash	79	Wesfarmers Hi-efficiency	Wesfarmers Co-op. Ltd.			Wheat, pollard, barley, oats, soya beans, whale meat, fish, milk, antibiotics, minerals	22·0	3·0	5·0	1·0 0·2	2·3 1·0	2·5 1·0	Vitamin A 3,000 i.u./lb. Vitamin D_3 600 i.u./lb.
Broiler Starter Pellets	80	do.	do.	do.	do.	do.	do.	do.	22·0	3·0	5·0	1·0 0·2	2·3 1·0	2·5 1·0	do.
Broiler Starter Crumbles	81	do.	do.	do.	do.	do.	do.	do.	22·0	3·0	5·0	1·0 0·2	2·3 1·0	2·5 1·0	do.
Broiler Finisher Mash	82	do.	do.	do.	do.	do.	do.	do.	20·0	3·0	5·0	1·0 0·5	2·3 1·0	2·5 1·0	do.
Broiler Finisher Pellets	83	do.	do.	do.	do.	do.	do.	do.	20·0	3·0	5·0	1·0 0·5	2·3 1·0	2·5 1·0	do.
Vitamised Cockerel Mash A	84	do.	do.	do.	do.	do.	do.	do.	20·0	3·0	7·0	1·0	2·0 1·0	2·0 1·0	do.
Vitamised Cockerel Pellets A	85	do.	do.	do.	do.	do.	do.	do.	20·0	3·0	7·0	1·0	2·0 1·0	2·0 1·0	do.
Vitamised Cockerel Crumbles A	86	do.	do.	do.	do.	do.	do.	do.	20·0	3·0	7·0	1·0	2·0 1·0	2·0 1·0	do.
Vitamised Cockerel Mash B	87	do.	do.	do.	do.	Wheat, barley, oats, tallow, fish, whale, antibiotics, minerals	18·0	3·0	7·0	1·0	2·0 1·0	2·0 1·0	Vitamin A 2,500 i.u./lb. Vitamin D_3 500 i.u./lb.

Stock Food	Applic. No.	Brand	By whom registered	Materials from which made	Registered Analysis: Crude Protein	Crude Fat	Crude Fibre	Sodium Chloride (NaCl)	Phosphoric Acid (P_2O_5)	Calcium (Ca)	Percentages of other substances claimed to be of Medicinal or Nutritive Value
					(Min.) %	(Max.) (Min.) %	(Max.) %	(Max.) %	(Max.) (Min.) %	(Max.) (Min.) %	%
B.—Compound Foods— *continued*											
5.—*Poultry Foods—cont.*											
(c) *Fattening—continued*											
Vitamised Cockerel Pellets B	88	Wesfarmers Hi-efficiency	Wesfarmers Co-op. Ltd.	Wheat, barley, oats, tallow, fish, whale, antibiotics, minerals	18·0	3·0	7·0	1·0	2·0 1·0	2·0 1·0	Vitamin A 2,500 i.u./lb. Vitamin D_3 500 i.u./lb.
18% Protein Cockerel Fattening Pellets Vitamised	139	Thomas	W. Thomas & Co. (W.A.) Ltd.	Grain meals, bran, pollard, wheat germ, meat meal, whale meal, lucerne meal, milk powder, "Christmas phos," oyster flour, salt, manganese sulphate	18·0	2·0	6·5	1·0 0·5	3·5 1·0	3·75 1·0	Vitamin A 6,000,000 i.u./ton Vitamin D_3 1,800,000 i.u./ton
18% Protein Vitamised Cockerel Fattening Mash	140	do.	do. do. do.	do. do. do.	18·0	2·0	6·5	1·0 0·5	3·5 1·0	3·75 1·0	do.
24% Broiler Pre-Starter Crumbles + C.P.	141	do.	do. do. do.	Grain meals, pollard, milk powder, liver meal, lucerne meal, meat meal, whale meal, "Christmas phos," fish meal, soya bean meal, salt, riboflavin, antibiotics, manganese sulphate, vitamins E and K, coccidiostat	24·0	2·5	6·0	1·0 0·25	3·0 1·0	2·5 1·0	do.
20% Broiler Crumbles B + C.P.	142	do.	do. do. do.	do. do. do.	20·0	2·5	6·0	1·0 0·25	3·0 1·0	2·5 1·0	do.
22% Broiler Crumbles A + C.P.	143	do.	do. do. do.	do. do. do.	22·0	2·5	6·0	1·0 0·25	3·0 1·0	2·5 1·0	do.
24% Hi-Level Antibiotic Booster Crumbles	144	do.	do. do. do.	do. do. do.	24·0	2·5	6·0	1·0 0·25	3·0 1·0	2·5 1·0	do.
Broiler Mash	180	Morloy ..	R. B. Young Products Pty. Ltd.	Wheat meal, bran, whale meal, meat meal, bone flour, chick grit, manganese sulphate, ribon, salt, skim milk powder, antibiotic concentrate	20·0	3·0	6·0	2·0 0·25	3·5 1·0	3·75 1·5	Vitamin A 3,300 i.u./lb. Vitamin D_3 330 i.u./lb.
Fattening D Mash	184	do.	do. do. do.	Wheat meal, bran, pollard, whale meal, whale solubles, meat meal, minerals, bone flour, salt	11·0	3·0	6·0	2·0 0·25	3·5 1·0	3·75 1·5	
Broiler "A"	282	Mayco	Maylands Milling Co. Pty. Ltd.	Wheat, barley, oats, bran, pollard, cotton seed, whale meal, meat meal, liver meal, blood meal, milk, molasses, fat, lucerne, oyster flour, salt	20·0	7·0 6·0	4·25	1·0 0·5	1·1 1·0	2·5 2·0	Vitamins A, D_3, E, B_{12}, K, Riboflavin, Pantothenic Acid, Nicotine Acid, Choline, Chloride, Manganese, Iron, Copper, Zinc
Broiler "B"	283	do.	do. do. do.	do. do. do.	19·0	7·0 6·0	4·5	1·0 0·5	1·0 0·75	2·4 2·0	do. do.
Broiler "C"	284	do.	do. do. do.	do. do. do.	18·0	7·25 6·25	4·75	1·0 0·5	1·0 0·9	2·3 2·0	do. do.
Broiler Starter Crumbles 20%	293	Bairds .	Bairds Pty. Ltd.	Wheat meal, barley, whale meal, meat meal, wheat germ, skim milk, lucerne, salt, manganese sulphate	20·0	7·0 3·0	4·0	1·0 0·5	2·5 1·0	3·0 1·0	Vitamin A 4,800,000 i.u./ton Vitamin D_3 1,440,000 i.u./ton Ribon 5 gms./ton Pant. Acid 12 gms./ton Bacitracin 4 gms./ton Penicillin 4 gms./ton

(d) *Others*											
Duck Starter and Grower Mash	99	Wesfarmers Hi-efficiency	Wesfarmers Co-op. Ltd.	Bran, pollard, wheat, whale, skim milk, barley, lucerne, oats, minerals, antibiotics	17·0	3·0	7·0	5·0	2·5 1·0	2·0 1·0	Vitamin A 5,500 i.u./lb. Vitamin D_3 1,100 i.u./lb.
Duck Starter and Grower Pellets	100	do.	do. do. do.	do. do. do.	17·0	3·0	7·0	5·0	2·5 1·0	2·0 1·0	do.
24% Turkey Starter Crumbles	152	Thomas .	W. Thomas & Co. (W.A.) Ltd.	Grain meals, bran, pollard, wheat germ, milk powder, lucerne meal, meat meal, whale meal, "Christmas phos," manganese sulphate, antibiotics, riboflavin, Vitamin K	24·0	2·5	6·0	1·0 0·25	3·0 1·0	2·5 1·0	Vitamin A 6,000,000 i.u./ton Vitamin D_3 1,800,000 i.u./ton
18% Turkey Grower Pellets	153	do.	do. do. do.	do. do. do.	18·0	2·5	6·0	1·0 0·25	3·0 1·0	2·5 1·0	do.
6.—*Pig Foods*											
Pig Concentrate 50%	15	Millers	W. H. Milne & Co. Pty. Ltd.	Whale meal, fish meal, meat meal, ground limestone, salt	50·0	5·0 2·5	4·0	1·0 0·25	5·0 2·0	10·0 5·0	Vitamin A 20,000,000 i.u./lb. Vitamin D_3 40,000,000 i.u./lb. Methionene, Manganese Sulphate, Ferrous Sulphate, Copper Sulphate, Ribon, Pant. Acid, Pyridoxine, Iodine, cobalt
Sow Pellets 16%	40	do.	do. do. do.	Wheat meal, oats, barley, meat meal, fish meal, limestone, lucerne, salt, pollard, bran	16·0	5·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 1·0	Vitamin A 4,800,000 i.u./ton Vitamin D_3 1,440,000 i.u./ton Vitamin E (25), Pant. Acid, Ribon, Pyridoxine, Folic Acid
Pig Weaner Pellets 18%	41	do.	do. do. do.	Wheat meal, oats, barley, bran, pollard, milk powder, meat meal, fish meal, lucerne, ground limestone, salt	18·0	5·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 1·0 Vit.	Vitamin A 4,800,000 i.u./ton Vitamin D_3 1,440,000 i.u./ton Terramycin, Ribon, Pant. Acid, Pyridoxine, Iodine, Cobalt, Ferrous Sulphate, Copper Sulphate
Pig Fattening Pellets 13%	42	do.	do. do. do.	Bran, pollard, wheat meal, oats, barley, fish meal, meat meal, lucerne, salt, ground limestone, manganese sulphate	13·0	5·0 3·0	7·0	1·5 0·5	3·0 1·0	3·5 1·0	Vitamin A 4,800,000 i.u./lb. Iodine Vitamin D_3 1,440,000 i.u./lb. Cobalt
Pig Grower Pellets 15%	43	do.	do. do. do.	do. do. do.	15·0	7·0 3·0	7·0	1·0 0·5	2·5 1·0	3·0 1·0	Vitamin A 4,800,000 i.u./lb. Vitamin D_3 1,440,000 i.u./lb. Ferrous Sulphate, Copper Sulphate, Iodine, Cobalt, Ribon, Pant. Acid, Pyridoxine
Pig Food	57	Eve-lyn	Tropical Traders Ltd.	Gristed wheat, barley, rye, pollard, salt, limestone, chalk, sulphate, animal charcoal, sulphate of iron, limestone, copper sulphate (trace), corriander, areconut, foenugreek	5·0	1·0	5·0	9·6 8·6	3·75 3·25	9·5 8·5	
Sow and Weaner Meal	101	Wesfarmers Hi-efficiency	Wesfarmers Co-op. Ltd.	Bran, pollard, whale meat, barley, stable seed, minerals	18·0	2·0	6·0	1·0 0·5	2·5 1·5	2·0 1·0	Vitamin A 3,000 i.u./lb. Vitamin D_3 600 i.u./lb.
Sow and Weaner Pellets	102	do.	do. do. do.	do. do. do.	18·0	2·0	6·0	1·0 0·5	2·5 1·5	2·0 1·0	do.

Stock Food	Applic. No.	Brand	By whom registered	Materials from which made	Registered Analysis: Crude Protein	Crude Fat	Crude Fibre	Sodium Chloride (NaCl)	Phosphoric Acid (P_2O_5)	Calcium (Ca)	Percentages of other substances claimed to be of Medicinal or Nutritive Value
					(Min.) %	(Max.) (Min.) %	(Max.) %	(Max.) (Min.) %	(Max.) (Min.) %	(Max.) (Min.) %	%
B.—Compound Foods—*continued*											
6.—*Pig Foods—contd.*											
Pig Fattening Meal	103	Wesfarmers Hi-efficiency	Wesfarmers Co-op. Ltd.	Barley, pollard, whale, stabilised minerals	13·0	1·0	5·0	1·5 0·5	2·0 1·0	2·0 0·5	Vitamin A 2,000 i.u./lb. Vitamin D_3 400 i.u./lb.
Pig Fattening Pellets	104	do.	do. do. do.	do. do. do.	13·0	1·0	5·0	1·5 0·5	2·0 1·0	2·0 0·5	do.
Pig Fattening Cubes	105	do.	do. do. do.	do. do. do.	13·0	1·0	5·0	1·5 0·5	2·0 1·0	2·0 0·5	do.
Pig Pro 50	160	Thomas	W. Thomas & Co. (W.A.) Ltd.	Meat meal, whale meal, blood meal, fish meal, milk powder, soya bean meal, peanut meal, liver meal, dried bewers' yeast, salt, "Christmas phos," iodine, copper, manganese, iron, cobalt, zinc, penicillin, vitamins A, D_3, B_{12}, I	50·0	8·5 *Nil*	1·5	3·0 1·5	15·0 9·0	3·0 1·7	
18% Protein Antibiotic Vitamised Pig Starter Pellets	166	do.	do. do. do.	Pollard, gristed grains, wheat meal, whale meal, oyster flour, salt, riboflavin, antibiotics, cobalt sulphate, manganese sulphate, "Christmas phos," stabilised iodine	18·0	2·5	6·5	2·0 1·0	3·75 1·0	4·0 1·0	Vitamin A 6,000,000 i.u./ton Vitamin D_3 1,800,000 i.u./ton Manganese 60 ppm Cobalt 3 ppm Stabilised Iodine 1·2 ppm
16% Protein Antibiotic Vitamised Pig Grower Cubes	167	do.	do. do. do.	do. do. do.	16·0	2·5	6·5	2·0 1·0	3·5 1·0	4·5 1·0	do. do.
14% Protein Pig Fattening Cubes	168	do.	do. do. do.	Pollard, gristed grains, whale meal, meat meal, oyster flour, salt, manganese sulphate, stabilised iodine, cobalt, sulphate, "Christmas phos"	14·0	2·5	6·5	2·0 1·0	3·75 1·0	4·0 1·0	Manganese 60 ppm Stabilised Iodine 1·2 ppm Cobalt 3 ppm
18% Protein Antiobiotic Vitamised Pig Starter	169	do.	do. do. do.	Pollard, wheat germ, gristed grains, meat meal, whale meal, oyster flour, salt, riboflavin, antibiotics, "Christmas phos," manganese sulphate, stabilised iodine	18·0	2·5	6·5	2·0 1·0	3·75 1·0	4·0 1·0	Vitamin A 6,000,000 i.u./ton Vitamin D_3 1,800,000 i.u./ton Manganese 60ppm Cobalt 3 ppm Stabilised Iodine 1·2 ppm
16% Protein Antiobiotic Vitamised Pig Grower	170	do.	do. do. do.	Pollard, gristed grains, meat meal, whale meal, oyster flour, salt, antibiotics, manganese sulphate, stabilised iodine, cobalt sulphate, "Christmas phos"	16·0	2·5	6·5	2·0 1·0	3·5 1·0	4·5 1·0	do. do.
14% Protein Pig Fattening Mash	171	do.	do. do. do.	Pollard, gristed grain, whale meal, meat meal, oyster flour, salt, manganese sulphate, stabilised iodine, cobalt sulphate, "Christmas phos"	14·0	2·5	6·0	2·0 1·0	3·75 1·0	4·0 1·0	Manganese 60 ppm Cobalt 3 ppm Stabilised Iodine 1·2 ppm

Pig Mash Vitamin Fortified A + D_3	183	Morloy	R. B. Young Products Pty. Ltd.	Wheat meal, pollard, oyster flour, limestone, rock phosphate, cereal meals, meat meal, whale meal and solubles, minerals, salt	14·0	3·0	6·0	2·0 0·25	3·5 1·0	3·75 1·5	Vitamin A 3,300 i.u./lb. Vitamin D_3 300 i.u./lb.
Formula 48, Pig Concentrate	203	Wesfarmers Hi-efficiency	Wesfarmers Co-op. Ltd.	Whale meal, fish meal, meat meal, oats, barley, bran and minerals	45·0	2·5	3·5	4·0 3·0	4·5 3·5	5·0 4·0	Vitamin A 11,000 i.u./lb. Vitamin D_3 2,000 i.u./lb.
7.—Dog Foods											
Dog Meal	113	do.	do. do. do.	Weeties, meat, buttermilk, pollard, wheat germ, bone	20·0	4·0	5·0	2·0 1·0	2·5 1·0	3·0 1·0	Vitamin A 4,000 i.u./lb. Vitamin D_3 800 i.u./lb.
Dog Pellets	114	do.	do. do. do.	do. do. do.	20·0	4·0	5·0	2·0 1·0	2·5 1·0	3·0 1·0	do.
Dog and Cat Food	125	Tucker Box	Tucker Box Dog & Cat Food Co.	Meat and meat by-products, cereals, vegetables, salt	10·0	5·0 2·5	0·5	1·0			
20% Protein Kanine Kibbles	177	Thomas	W. Thomas & Co. (W.A.) Ltd.	Pre-digested cereal meal, wheat germ, grain meals, meat meal, milk powder, molasses, oyster flour, bone flour, salt, potassium iodide, vitamin B_1	20·0	1·0	1·5	0·5	2·5 0·5	2·5 0·5	Vitamin A 6,000,000 i.u./ton Vitamin D_3 1,800,000 i.u./ton
Dog Food	214	Jonah	Hunts Canning Co. Pty. Ltd.	Whale meat, wheat meal and salt	21·4	7·5 5·1	0·3	0·27			
Dog and Cat Food	215	Dine-A	do. do. do.	Fish, wheat meal, salt	21·4	5·0 3·0	0·7	1·7 1·5	3·7 3·0	3·3 2·7	
Dog Bone	244	Swallow's	Swallows Biscuit Pty. Ltd.	Flour, fat, ground biscuit meal, meat and bone meal, salt, bicarbonate of soda, approved food colours	14·0	13·0 5·0	3·0	1·8 1·4	0·2 0·1	0·5 0·2	
Charcoal Shapes	245	Snaps	Snaps Dog Foods Pty. Ltd.	Whole meal, flour, wheat germ, bone flour, meat and whale meal and solubles, milk powder, molasses, iodised salt, vitamins A + D_3 and pulverised charcoal	20·0	2·5 2·0	6·0	0·6 0·5	3·0 2·5	3·0 2·5	
Puppy Meal	246	do.	do. do. do.	Whole meal, flour, wheat germ, bone flour, meat and whale meal and solubles, milk powder, molasses, iodised salt, vitamins A + D_3	20·0	4·5 4·0	1·5	0·6 0·5	3·0 2·5	3·0 2·5	
Mixed Shapes	247	do.	do. do. do.	Whole meal, flour, wheat germ, bone flour, meat and whale meal and solubles, milk powder, molasses, iodised salt, vitamins A + D_3, pulverised charcoal	20·0	2·5 2·0	2·6	0·6 0·5	3·0 2·5	3·0 2·5	
Snaps No. 1	248	do.	do. do. do.	Whole meal, flour, wheat germ, bone flour, meat and whale meal and solubles, milk powder, molasses, iodised salt, vitamins A + D_3	20·0	2·5 2·0	1·5	0·6 0·5	3·0 2·5	3·0 2·5	
"Vets" Dog Bits	249	Vet-N-Ary	Creamoata Ltd.	Oats, groats, malted grain, wheat germ, pollard, bone meal, liver, barley, processed wheat, milk solids, peas, lucerne, meat meal, lucerne meal, fish meal	24·0	6·0 5·0	4·0	0·1 0·07	1·2 0·5	1·7 0·5	Vitamin A 1,000 i.u./lb. Vitamin D_3 300 i.u./lb.
Dog Candy ("Munchies")	260	K9	Zest Manufacturing Co. Ltd.	Yeast, liver, meat meal, codliver oil, cheese, fish, salt, bone meal, wheat, dried eggs, wheat germ	23·0	7·0 6·0	2·0	4·0			
Dog Biscuits	261	do.	do. do. do.	Meat, liver, cheese, fish, bone meal, vegetables, salt, charcoal	15·0	3·5 2·0	2·0	2·0 2·0			
Dog Biscuit "Fives"	262	do.	do. do. do.	Meat, fish, cheese, charcoal, liver, vegetable with chlorophyll	15·0	3·5 2·0	2·0	2·0			
Dog Biscuit Kibblets	263	do.	do. do. do.	do. do. do.	15·0	3·5 2·0	2·0	2·0			
8.—Horse Foods											
Horse Food	55	Eve-Lyn	Tropical Traders Ltd.	Pollard, barley, wheat, gristed wheat, linseed (whole), salt, chalk, magnesium sulphate (trace), sodium bicarbonate, medicinal herbs	8·5	3·0 2·0	7·0	5·0 4·5	1·0 0·5	1·75 0·75	Sulphur 1·25

Stock Food	Applic. No.	Brand	By whom Registered	Materials from which Made	Registered Analysis: Sodium Chloride (NaCl)	Phosphoric Acid (P_2O_5)	Lime (CaO)	Magnesia (MgO)	Iron (Fe)	Sulphur (S)	Iodine (I)	Copper (Cu)	Cobalt (Co)	Manganese (Mn)	Potassium (K)	Zinc (Zn)	Other
					% (Max.)	% (Min.)	% (Min.)	% (Min.)	% (Min.)	% (Min.)	% (Min.)	% (Min.)	% (Min.)	% (Min.)	% (Min.)	% (Min.)	%
C.—Stock Licks																	
1.—*Bone Meals*																	
Bone Meal	10	W.A.M.E.	W.A. Meat Export Works	Selected bones solely	0·25	24·0	27·0	....	....	....	....	....	....	....	....	....	Protein 18·75
Sterilized Bone Flour	13	Tricalos	Davis Gelatine (Aust.) Pty. Ltd.	Bones	....	30·0	40·0	....	....	....	....	....	....	....	....	....	Crude Protein 5·0
Sterilised Bone Grit	14	do. ...	do. do.	do.	...	30·0	40·0	....	...	....	...	....	....	....	....	....	do.
Bonemeal	234	Ancho ...	AnchorageButchers Pty. Ltd.	Waste meat products	Trace	26·76	26·95	....	....	....	....	....	....	....	....	....	Min. Crude Protein 23·63 Min. Crude Fat 2·44 Fibre trace
Do.	253	Watsonia	Watsons Foods Pty. Ltd.	Abattoir offal and bones	....	25·5	36·0	....	....	....	....	....	....	....	....	....	Min. Protein 14
2. *Oyster Flours*																	
Oyster Flour	128	Thomas	W. Thomas & Co. (W.A.) Ltd.	Oyster shell	1·0	*Nil*	42·0										
Do.	190	Deans	J. Dean & Son	do.	0·5	Trace	42·0										
3.—*Mixed Stock Licks*																	
Medicated Calcium	2	Blue Peter	Agricultural Products Co.	Sulphate of minerals, ground limestone, limonite	1·0	....	45·0	....	3·5	....	....	1,500 ppm	285 ppm	600 ppm			
Medicated Salt Rock "B"	3	do.	do. do.	Salt, ground limestone, limonite, sulphate of minerals	70·0	....	6·0	....	1·5	....	....	550 ppm	95 ppm	200 ppm			
Minorels	4	do.	do. do.	Ground rock phosphate, ground limestone, limonite, sulphates of minerals, borax	10·0	5·0	20·0	1,200 ppm	4·0	....	....	5,000 ppm	550 ppm	1,000 ppm	....	500 ppm	Boron 200 ppm
Cobalt Sulphate	5	Bluecross	do. do.	Cobalt sulphate	....	....	....	....	....	....	....	....	21·0				
Manganese Sulphate	6	do.	do. do.	Manganese sulphate	....	....	....	....	....	....	....	....	....	22·0			
The Balanced Mineral Supplement	8	Stress ...	British Pharmaceutical Pty. Ltd.	Bone, phosphate, potassium, anhydrogen, phosphate, magnesium sulphate, lactose, ferrous lactate, brewer's yeast, manganese sulphate, potassium iodine	...	36·64	...	1·1	.	....	0·0016	....	....	0·003	8·9	....	Lactose 9·0
Concentrated Lick	58	Vic Lic	Wilcox Mofflin Ltd.	Bone, char, ground limestone, cobalt, chloride	*Nil*	24·3	49·2	....	....	....	....	....	0·0165				
Mineral Food Supplement for Poultry	116	Watkins	Watkins Products Inc.	Calcium carbonate, magnesium carbonate, dicalcic phosphate, bone char, ferric oxide, ferrous sulphate, ground sulphate, salt, mineral oil, green manganese oxide, cobalt sulphate, copper sulphate, zinc sulphate, potassium iodide	10·5	15·0	33·8	....	1·1	....	0·0153	0·0129	0·01	0·25	.	0·01	Min. Manganese 0·5

Mineral Food Supplement for Stock	117	do.	do.	do.	Dicalcic phosphate, micronised rock phosphate, calcium carbonate, salt, ferric oxide, ferrous sulphate, ground sulphur, magnesium sulphate, iodine, copper, manganese, cobalt, zinc	9·0	15·5	32·0	0·7	1·1	....	0·0176	0·0129	0·01	0·009	....	0·011	
Stock Mineral Block	118	do.	do.	do.	Dicalcic phosphate, micronised rock phosphate, calcium carbonate, ferric oxide, magnesium sulphate, ferrous sulphate, ground sulphur, molasses, salt, potassium iodide, copper sulphate, manganese sulphate, cobalt sulphate, zinc sulphate	42·5	8·56	17·9	0·39	0·616	....	0·009	0·007	0·005	0·005	..	0·006	
Phosphate Feeding Supplement	127	Christmas Phos	W. Thomas & Co. (W.A.) Ltd.		Precipitated phosphate	*Nil*	36·6	44·8										
Sol-V-Min C270	197	David Gray's	David Gray & Co. Ltd.		Urea, mono ammonium, phosphate, cupper sulphate, cobalt chloride	..	25·0		....	..	....	....	0·6	0·07	....	..	..	Nitrogen 27·0
Sol-V-Min C345	198	do.	do.	do.	Cobalt chloride, copper sulphate, urea, ground limestone, iron oxide	..	....	....	..	....	....	....	0·095	0·015	....	....	....	Nitrogen 34·5 Calcium (Ca) 7·5
Sheep Lick	199	do. ..	do.	do.	Sodium chloride, various trace elements, bone meal, yeast	80·0	1·0	5·0	..	1·2	3·3	150 ppm	200 ppm	92 ppm	200 ppm	50 ppm	80 ppm	
Cattle Lick ..	200	do. ..	do.	do.	do. do. do.	80·0	1·0	5·0	....	1·2	3·3	150 ppm	220 ppm	92 ppm	....	....	80 ppm	
Sol-V-Min C88	201	do. ..	do.	do.	Mono ammonium, phosphate, copper sulphate, cobalt, chloride	....	47·0	....	....	....	....	....	2·5	0·3	..	..	....	Nitrogen 8·8
Sol-V-Min Mineral Pig Supplement	202	do.	do.	do.	Salt, bone char, bone flour, ground limetone, monosodium phosphate, magnesium sulphate, iron sulphate, copper sulphate, cobalt chloride, bicarbonate of soda, manganese sulphate, zinc sulphate, potassium iodide, sulphur, molasses	9·5	24·9	30·0	0·6	1·1	2·5	0·03	0·02	0·01	0·01	.	0·02	
Superex . .	204	K.C.C. .	Kwinana Chemical Co.		Superphosphate	..	30·0	4·0										
Monophos	205	do.	do.	do.	Monosodium phosphate .	..	58·0											
Cobalphos ..	206	do. ..	do.	do.	Cobalt sulphate, phosphoric acid	.	20·0	..	..	....	....	..	..	5·0				
Aquamin Concentrate	207	do.	do.	do.	Superphosphate, phosphoric acid, copper ore, cobalt sulphate	..	31·0	....	..	..	....	....	0·6	0·1				
Aquamin Double Concentrate	208	do. .	do.	do.	Phosphoric acid, copper sulphate, cobalt sulphate	..	60·0	....	....	..	..	..	0·4	0·2				
Phosphamin .	209	do. ..	do.	do.	Superphosphate, phosphoric acid, copper ore, cobalt sulphate	..	20·0	..	..	..	....	....	1·25	1·25				
Iodised Mineral Lick	211	Day, Son & Hewitt Ltd.	Boans Ltd.	..	Limestone, flour, steriilised feedibone, flour, salt, iron sulphate, ferric oxide, cobalt sulphate	83·7	1·72	5·25	..	0·71	0·49	·03	0·06	0·004	....	0·01		
Poultry Spice	212	do.	do.		Wheat, offals, spices, mineral salts	1·0	*Nil*	10·0	..	2·1	1·2	38 ppm	128 ppm	21 ppm	1,720 ppm			
Sheep Pack	218	Min-A-Vit	Elder Smith & Co. Ltd.		Bone dust, talc, calcium carbonate, molasses, copper sulphate, zinc sulphate, manganese sulphate, cobalt sulphate, potassium iodide, vitamin concentrate	5·0	17·24	36·69	2·85	....	....	0·042	0·099	0·037	0·030		0·020	Sucrose 8·839 Vitamin D_3 0·450 (320 i.u./gm.)

Stock Food	Applic. No.	Brand	By whom Registered	Materials from which Made	Registered Analysis: Sodium Chloride (NaCl)	Phosphoric Acid (P_2O_5)	Lime (CaO)	Magnesia (MgO)	Iron (Fe)	Sulphur (S)	Iodine (I)	Copper (Cu)	Cobalt (Co)	Manganese (Mn)	Potassium (K)	Zinc (Zn)	Other
C.—Stock Licks—*continued*					% (Max.)	% (Min.)	% (Min.)	% (Min.)	% (Min.)	% (Min.)	% (Min.)	% (Min.)	% (Min.)	% (Min.)	% (Min.)	% (Min.)	%
3.—*Mixed Stock Licks—continued*																	
Sheep Plus Pack ...	221	Min-A-Vit	Elder Smith & Co. Ltd.	Bone dust, talc, calcium carbonate, molasses, copper sulphate, zinc sulphate, manganese sulphate, cobalt sulphate, potassium iodide, vitamin concentrate	5·0	17·24	33·69	2·85	....	....	0·042	0·099	0·037	0·020	....	0·020	Sucrose 8·839 Vitamin D_3 320 i.u./gms. Vitamin A 475 i.u./gm.
Orange Band	222	do.	do. do.	Bone dust, talc, whiting, salt, molasses, copper sulphate, zinc sulphate, manganese sulphate, cobalt sulphate, potassium iodide, vitamin concentrate	20·0	20·0	25·0	2·25	0·29	....	0·046	0·049	0·01	0·032	....	0·022	
Orange Band Plus Pack	223	do.	do. do.	do. do. do.	20·0	20·0	25·0	2·25	0·29	....	0·046	0·049	0·01	0·032	....	0·022	Vitamin A 204,000 i.u./lb. Vitamin D_3 158,000 i.u./lb.
Red Brand New Vitamin Formula	224	do.	do. do.	Bone dust, talc, calcium carbonate, salt, molasses, copper sulphate, zinc sulphate, manganese sulphate, cobalt sulphate, iron oxide, potassium iodide, vitamin concentrate	15·0	9·5	20·0	6·4	0·116	....	0·04	0·02	0·006	0·032	....	0·022	Vitamin A 7,000 i.u./gm. Vitamin D_3 350 i.u./gm. Vitamin E 0·5 i.u./gm. Vitamin B_{12} 1·0 i.u./gm.
Black Band	225	do.	do. do.	Bone flour, calcium carbonate, manganese sulphate, iron oxide, potassium iodide, salt, cobalt sulphate, copper sulphate, vitamin D_3	15·0	18·0	37·5	....	0·058	....	0·023	0·001	0·001	0·520	....	0·113	Vitamin D_3 275 i.u./gm. Riboflavin 0·4 mg./gm.
Black Band New Vitamin Formula	226	do.	do. do.	Bone flour, calcium, carbonate, manganese sulphate, iron oxide, potassium iodide, cobalt sulphate, copper sulphate, vitamins D_3, A, K_3, calcium pantothenate	15·0	18·0	37·5	....	0·058	....	0·023	0·001	0·001	0·52	....	0·113	Vitamin A 1,100 i.u./gm. Vitamin D_3 275 i.u./gm. Calcium-dipantothenite 0·6 mg./gm. Menadione-sodium bisulphate 0·2 mg./gm. Riboflavin 0·4 mg./gm.

Pig Pack	227	do.	do. do.	Bone dust, talc, calcium carbonate, salt, molasses, copper sulphate, zinc sulphate, manganese sulphate, potassium iodide, ferrous gluconate, vitamins A, D_3, B_1, riboflavin, nicotinic acid, vitamin B_{12}	18·0	4·5	30·0	2·26	0·231	....	0·07	0·09	0·021	0·114	....	0·169	Vitamin A 650 i.u./gm. Vitamin D_3 325 i.u./gm. Vitamin B_1 0·26 mg./gm. Vitamin B_{12} 1·5 mg./gm. Riboflavin 0·28 mg./gm. Nicotinic Acid 2·2 mg./gm.
Poultry Powder Iodised	228	Rawleigh's	W. T. Rawleigh Co. Ltd.	Oyster shell, sulphur, potassium, iodine, copperas, iodine sulphate, ground bone, manganese sulphate, cobalt sulphate, zinc sulphate, quesia, difforinated phosphate, mineral ore	....	16·5	38·7	....	400 ppm	4·0	100 ppm	40 ppm	100 ppm	120 ppm	40 ppm	100 ppm	
Mineralised Supplement for Stock	229	do.	do. do.	Salt, sulphur, copperas, sodium phosphate, potassium iodide, calcium carbonate, cobalt sulphate, difforinated phosphate, mineral oil, molasses and drug mixture	15·0	12·24	27·0	....	1,000 ppm	3·5	200 ppm	....	....	10 ppm	80 ppm	. .	Sodium (Na) 70 ppm Calcium (Ca) 12·42
Trace Element Stock Lick	243	Canterbury	Canterbury Stock Feed Mnfg. & Distributing Co. Pty. Ltd.	Phenothiozine, molasses, vitamins A + D_3, copper sulphate, cobalt sulphate, zinc sulphate, manganese sulphate, potassium iodide, bone flour, iron sulphate, magnesium sulphate, meat meal, sulphur, salt, linseed meal, cod liver oil	15·0	12·0	18·0	($MgSO_4$) 2·0	($FeSO_4$) 2·0	1·5	(K_1) 0·045	($CuSO_4$) 0·038	($CoSO_4$) 0·045	($MnSO_4$) 0·041	....	($ZnSO_4$) 0·045	Phenothiozine 0·75 Molasses 4·0 Vitamin A 125 i.u./gm. Vitamin D 22·5 i.u./gm.
Tracalphos Hiphos	250	Terra	Terra Trading Co.	Rock phosphate, gypsum, magnesites, copper sulphate, cobalt sulphate, sodium molybdate, sodium selerite, potassium iodide, aniseed oil	*Nil*	34·5	43·0	1·0	3,000 ppm	0·5	100 ppm	1,500 ppm	200 ppm	300 ppm	....	200 ppm	Fluorine 1·5 Molybdenum 150 ppm Selenium 30 ppm Aniseed Oil traces
Do.	251	do.	do. do.	Lime, mineral phosphate, magnesite, gypsum, copsulphate, cobalt sulphate, zinc sulphate, sodium molybdate, sodium selerite, potassium iodide, aniseed oil, manganese sulphate	*Nil*	11·0	43·5	0·5	1,200 ppm	0·5	100 ppm	1,500 ppm	200 ppm	300 ppm	....	200 ppm	Fluorine 0·5 Molybdenum 150 ppm Selenium 30 ppm Aniseed Oil traces
Denmark Cobalt Lick	268	C.S.M.L.	Cuming Smith & Mt. Lyell Farmers Fertilisers Ltd.	Limonite, copper sulphate, salt	38·0	....	....	....	....	....	....	0·14	20 ppm				
Stock Conditioner	269	Lufl's Blue Label	Stam Products	Yeast, maize, oil meal, caramel, oil of aniseed, boric acid, thiamine, hydrochloride, salts of iron, copper, manganese, zinc and cobalt	....	....	....	....	16·46 ppm	....	....	53·3 ppm	49·6 ppm	50·7 ppm	....	56·4 ppm	Vitamin B, 29,700 i.u./lb.

Stock Food	Applic. No.	Brand	By whom Registered	Materials from which Made	Registered Analysis: Sodium Chloride (NaCl) % (Max.)	Phosphoric Acid (P_2O_5) % (Min.)	Lime (CaO) % (Min.)	Magnesia (MgO) % (Min.)	Iron (Fe) % (Min.)	Sulphur (S) % (Min.)	Iodine (I) % (Min.)	Copper (Cu) % (Min.)	Cobalt (Co) % (Min.)	Manganese (Mn) % (Min.)	Potassium (K) % (Min.)	Zinc (Zn) % (Min.)	Other %
C.—Stock Licks— *continued* 3.—*Mixed Stock Licks—continued*																	
Mineral Supplement for Cows	270	Hyco	Goldsbrough Mort & Co. Ltd.	Potassium chloride, magnesium oxide, zinc sulphate, manganese sulphate, copper sulphate, sodium molybdate, sodium borate, potassium iodide, iron, sulphate, cobalt chloride	....	4·0	....	1,500 ppm	....	....	....	(Cu SO_4) 2,500 ppm	....	(Mn SO_4) 1,500 ppm	....	(Zn SO_4) 1,500 ppm	Potash (KU) 10·0 Nitrogen 6·0 Molybdenum 100 ppm Boron 50 ppm
Mineral Supplement for Sheep and Cattle	271	Hytel 2	do. do.	do. do. do.	....	(PO_4) 6·0	....	(Mg SO_4) 4·0	(Fe SO_4) 1,000 ppm	....	(KI) 1,000 ppm	(Cu SO_4) 12·0	(Co Cl_2) 0·5	(Mn SO_4) 7·5	....	(Zn SO_4) 8·0	Potash (KU) 15·0 Boron trace Molybdenum trace
Mineral Supplement for Pigs	272	Por-Co-Vite....	do. do.	Bone flour and charcoal, sodium sulphate, flowers of sulphur, salt, limonite, calcium carbonate, copper sulphate, cobalt chloride, potassium iodide	14·0	19·14	29·32	....	0·62	9·6	0·052	0·1	0·003				
Methionine	303	Bio	Biological Inst. of A'asia Ltd.	Methionine	....	....	....	....	....	....	....	....	....	....	....	....	Methionine 98 (Min.)
Vigomin	304	do.	do. do.	Malt flower, buttermilk powder, liver meal, charcoal, salt, sulphur, ferrous sulphate, bone flour	1·25	30·0	25·0	....	0·75	1·90	....	....	....	....	....	....	Crude Protein 5·6 Salt 1·25 Vitamin A 9,250,000 i.u./lb. Vitamin D_3 25,000 i.u./lb.
D.C. (New)	305	do.	do. do.	Iron glycerophosphate, copper chloride, cobalt, chloride, calcium glycerophosphate, ammonium molybdate, commercial hydrochloric acid water	2·92	....	....	....	0·37	....	....	0·085	0·014	....	....	....	Molybdenum 0·03
Ovatine For Fowls	306	do.	do. do.	Alstoma bark, ginger, foenugreek, ferrous sulphate, potassium iodide, manganese sulphate, copper sulphate, cobalt chloride	....	....	....	....	5·87	....	0·05	....	....	....	....	....	Copper Sulphate 0·4 Magnesium (Mg) 4·5 Cobalt Chloride 0·03 Magnesium Sulphate 2·19

Mineral and Vitamin Powder for Pigs	307	do.	do.	do.	Potassium nitrate, oil of aniseed, foenugreek, alstonia powder, limonite, copper sulphate, cobalt sulphate, calcium carbonate, liver meal, vitamins A + D_3, riboflavin, bone flour	....	6·0	23·3	....	3·2	....	....	(Cu SO_4) 0·026	(Co SO_4) 0·026	....	....	....	Vitamin A 44,500 i.u./lb. Vitamin D_3 4,450 i.u./lb. Riboflavin 33 mg./lb. Alstoma foenugreek (liver meal) 17·0
Concentrated " D "	308	Vita-Lick	D.H.A. (Rural) Pty. Ltd.		Sterilised bone flour, bone char, limonite, ground sulphur, sodium sulphate (anhydrous), potassium iodide	....	30·0	38·75	....	0·76	1·41	0·04	....	....	....	....	....	Na_2SO_4 (Min.) 1·06
Por-Co-Vite	310	do.	do.	do.	Bone flour and charcoal, sodium sulphate, flowers of sulphur, salt, limonite, calcium carbonate, copper sulphate, cobalt chloride, potassium iodide	14·0	19·14	29·32	....	0·62	9·6	0·052	0·1	0·003				
Block Calcium Sulphurised	311	do.	do.	do.	Salt, calcium carbonate, sulphur, aniseed, magnesium oxide	84·0	....	7·0	0·18	....	3·0							
Block Calcium with Trace Elements	312	do.	do.	do.	Salt, calcium carbonate, bone flour, limonite, copper sulphate, cobalt chloride, potassium iodide, aniseed, magnesium oxide	66·0	0·2	17·8	....	0·5	0·003	0·013	0·006	....	....	....	....	Cobalt Chloride 7 gs./ton Magnesium (Mg.) (Min.) 0·18
Block Calcium with Molybdenum	313	do.	do.	do.	Salt, calcium carbonate, sodium sulphate, sodium molybdate, aniseed, magnesium oxide, limonite	64·0	....	17·0	....	(Max.) 1·1	0·05	....	....	....	....	....	....	Molybdenum (Mo) 0·018 Sodium Sulphate 5·0 Magnesium (Mg) 0·18
Concentrated " Cal Con "	314	do.	do.	do.	Sterilised bone flour, calcium carbonate, limonite, powdered sulphur, sodium sulphate, potassium iodide	....	11·75	46·0	....	1·9	2·0	....	....	....	....	....	....	Sodium Sulphate 1·75 Potassium Iodide 16 ozs./ton

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Unretouched photographs of injector nozzles clearly show the difference.

CLEAN INJECTORS MEAN FULL COMBUSTION, EXTRA POWER.

Injector nozzles subjected to 100 hours' operation under high load under identical conditions. Photos show results after using ordinary distillate (top), nozzles were fouled with heavy smoke-causing deposits, whilst nozzles, after using Detergent-Action Distillate (bottom) remained clean and free of harmful deposits.
Caltex Detergent-Action Distillate prevents deposits from forming on nozzle tips of injectors — the basic cause of injector fouling, short injector life and inefficient injection.

CALTEX

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- **Ends rust in fuel systems!**
- **Keeps injectors clean!**
- **Minimises exhaust smoke.**
- **New Caltex is the only Distillate with Detergent-Action.**

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